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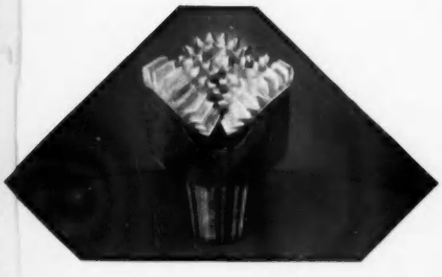
Amphibian Tractor



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PERMITS HEAVIER SLURRY!

Improved Unaflo—the retarded oil-well cement—requires a minimum of mixing water; yet, resulting slurry remains fluid and pumpable for extended periods under different hole temperatures and pressures.

WITH *improved* Unaflo, your slurry may be just as heavy as your pumps will pick it up from the mixing tub—because *improved* Unaflo's retarded set keeps the slurry fluid and pumpable for extended periods.

Advantages of Heavier Slurry

The introduction of Unaflo *retarded* cement brought about several important improvements in cementing. With cements that begin to stiffen when water is added and that stiffen more rapidly as the temperature increases, light, 13-lb. slurries often were used to maintain pumpability. With Unaflo *retarded* cement, practice shifted to the heavier, better and stronger 16- and 17-lb. slurries. These heavier slurries have several advantages. For example, a heavy Unaflo slurry that remains fluid and pumpable—

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2. Flushes ahead of it the lighter, rotary mud without breaking the mud seal;

3. Does not become contaminated with the mud;

4. Produces back of the casing a more continuous body of good cement;

5. Results in a stronger . . . denser . . . more impervious seal.

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Despite the satisfaction Unaflo retarded cement gave upon its introduction, Universal Atlas was not satisfied. Research continued. The result is an *improved* Unaflo—even more uniform in composition, more uniform in reaction to different types of mixing waters found on different jobs, and more uniform in retardation of setting time under different hole temperatures and pressures. Use Unaflo, the *improved* retarded oil-well cement, to protect your investment in tools and well. Get it from your dealer.

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Characteristics	Advantages
Composition is more uniform.	Less mixing water required for sustained pumpability.
Reaction to different mixing waters found on different jobs is more uniform.	Stronger, denser, more impermeable seal is obtained with heavier slurry.
Retardation of setting time under different hole temperatures is more uniform.	Fluidity is maintained under different hole temperatures and pressures.
Stiffening of slurry is not merely "slow." It is delayed, postponed, retarded. It remains fluid and pumpable for period of retardation, then hardens normally.	Pumpability is maintained after shutdowns for extended periods.
	Factor of safety is higher.

R. F

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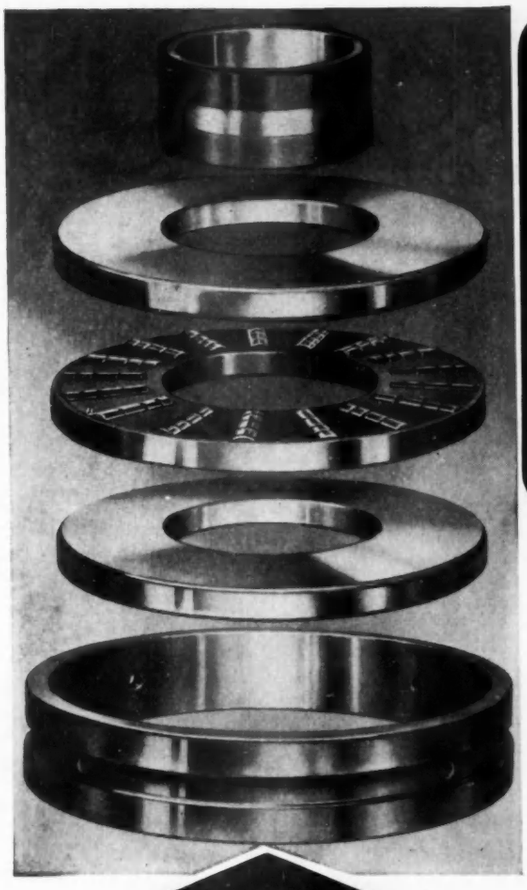

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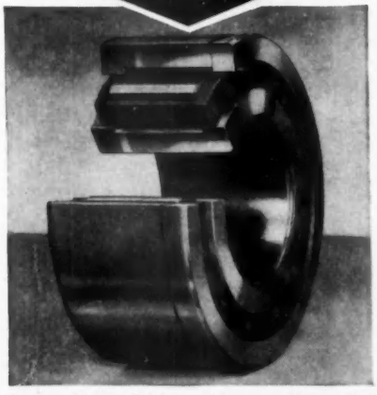

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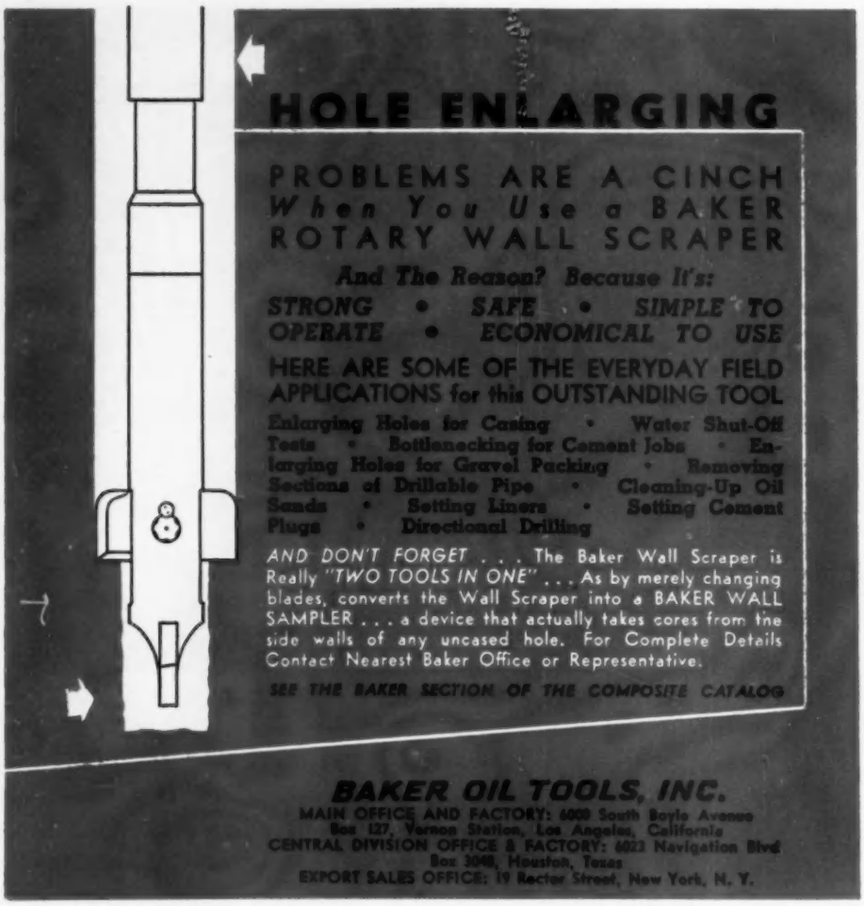
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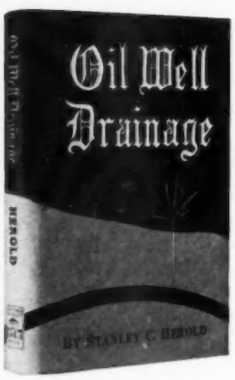
OIL WELL DRAINAGE

By STANLEY C. HEROLD



Oil Well Drainage is a practical book written in an easily readable style, fully supported by actual citations of field examples, expressly for geologists, engineers, landowners, and operators of producing oil and gas properties, for they meet directly the financial issues of the industry. It is confined to the problem with which they are primarily concerned — drainage.

Oil Well Drainage is planned for maximum reference value. Each chapter is divided into two parts, one each for two types of wells with distinct features in drainage. In the outer margin of each page the subject content of the paragraphs is indicated, so that it is possible to locate in a minimum of time the particular information wanted.

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LOOKING AHEAD

. . . with the Editor

Biennial Texas-Louisiana Gulf Coast Edition

Next week we will present our biennial special Texas - Louisiana Gulf Coast issue. A whale of a story sometimes can be told with a few figures. We submit the following as an example of importance of this area:

Cumulative crude production in excess of 2,025,000,000 barrels.

Daily producing rate of about half a million barrels from roughly 250 fields. Over 300 known undeveloped prospective fields.

An annual completion rate of 1500 to 1600 tests, including well over half of the holes drilled to 10,000 feet or more.

An estimated proven unproduced reserve of something like 4 billion barrels, or 20 percent of the nation's total volume.

These are the basic facts that explain why this biennial issue is one of the most popular petroleum trade publications issued, always going to press with a heavy advance copy sale.

The 1942 edition of the Texas-Louisiana Gulf Coast issue will be up to the high standard established in previous years. It will include the usual thumb - nail historical sketches of each field in the region, giving location, discovery data, producing formations, cumulative yields, estimated ultimate recoveries, remaining reserves, number of producing wells, principal leaseholders, and other pertinent data. All this information will again be presented in the condensed style originated by THE OIL WEEKLY.

In addition a general lead-all article will discuss the various highlights of developments and prospects of this important territory. It will include a number of pages giving condensed tabulated history of developments and operations in all these fields.

Furthermore, there will be an article on the Wilcox trend, most active current prospecting play in the region. This article has been prepared exclusively for this issue by two prominent Gulf Coast geologists.

★ KEEP 'EM PRODUCING ★

THE OIL WEEKLY. Published every Monday. Entered as second class mail matter December 23, 1916, at the post office at Houston, Texas, under act of March 3, 1879.

THE OIL WEEKLY

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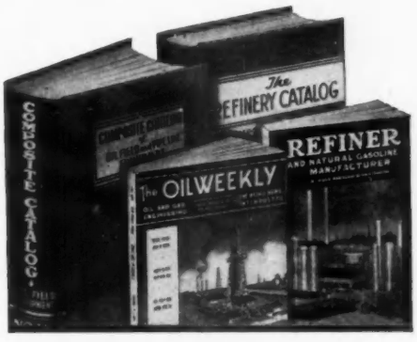

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The Oil Man's Calendar

MAR.	
25–25	American Society of Mechanical Engineers, Houston, Texas.
26–27	American Petroleum Institute, Mid-Continent District, Tulsa.
APRIL	
9–10	American Petroleum Institute, Eastern District, Pittsburgh.
16–17	National Petroleum Association, Cleveland, Ohio.
21–23	Southwestern Gas Measurement Short Course, Norman, Okla.
21–24	American Association of Petroleum Geologists, Denver, Colorado.
22–24	Petroleum Industry Electrical Association, Shreveport, La.
MAY	
13–15	Natural Gasoline Association, Mayo Hotel, Tulsa.
	A.P.I. Mid-Year Meeting Canceled.
27–28	Interstate Oil Compact Commission, Little Rock, Arkansas.
NOV.	
9–13	American Petroleum Institute, Chicago.

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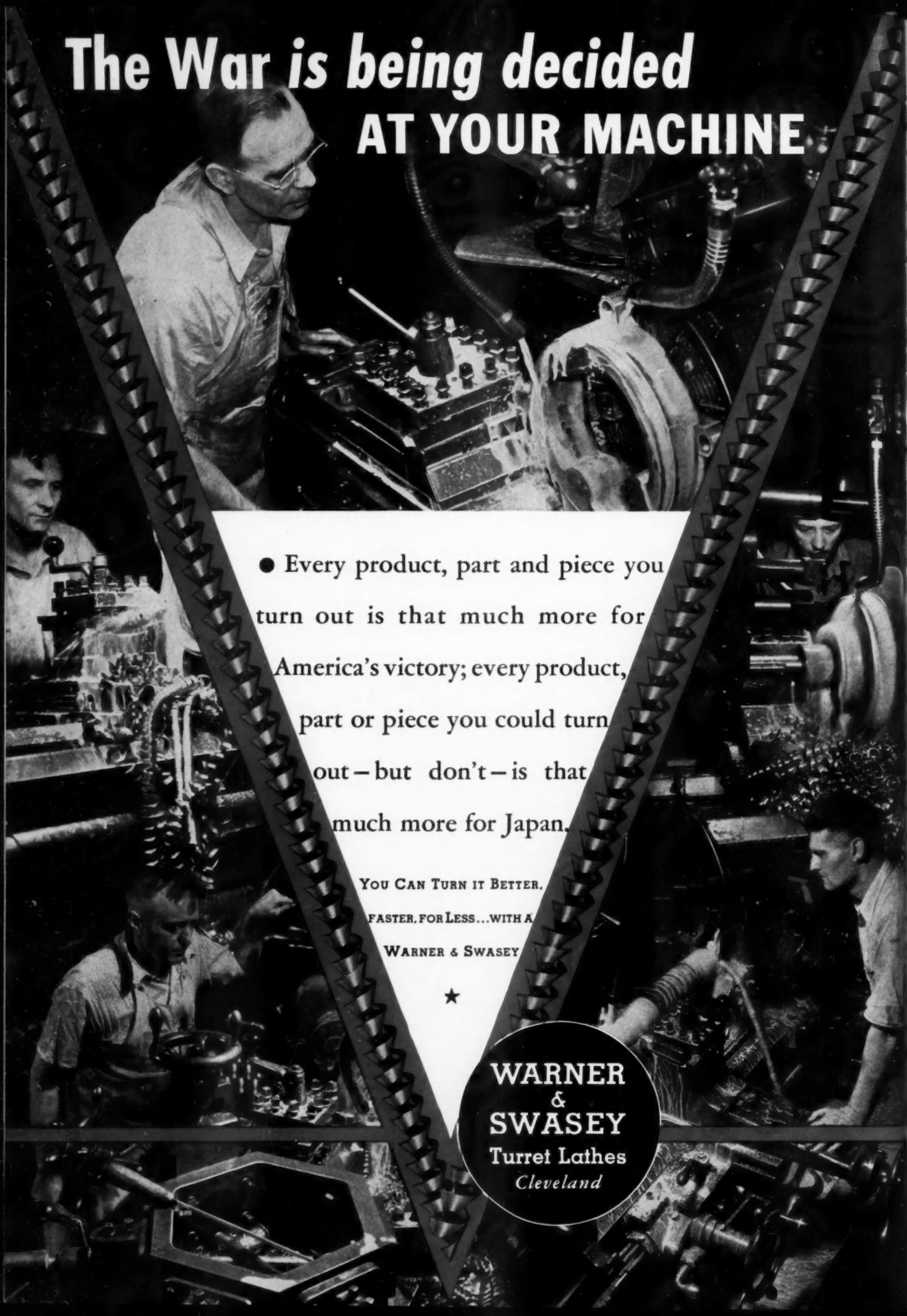
The War *is being decided*
AT YOUR MACHINE
● Every product, part and piece you turn out is that much more for America's victory; every product, part or piece you could turn out – but don't – is that much more for Japan.
YOU CAN TURN IT BETTER, FASTER, FOR LESS...WITH A WARNER & SWASEY
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The Changing Panorama

Bigger Cut in March Output Will Help

THE special OPC order asking a 204,100-barrel further reduction in March producing rates under those originally ordered for Texas, Louisiana, New Mexico, Arkansas and Mississippi was a necessary move to prevent further dislocation because of shipping difficulties. Oil was going to storage in large quantities in these regions, and pipe-line proration was being applied in a large part of Texas as tanks became filled.

While the action will relieve the increasing stock trend so far as crude oil and gasoline are concerned, it will aggravate the current heavy decline in residual fuel oil inventories as refiners necessarily curtail runs to stills due to smaller production.

Fields producing crudes that make aviation gasoline, toluene, butadiene and aviation lubricants are to be exempt, so allowables in other fields will be trimmed. Although this disrupts equitable proration between fields, the fuel-oil situation demands those pools producing crudes suited for this product also should be given preference if proper balance of refined products with consumption is to obtain.

Gasoline Output Down While Stocks Go Up

THE average American motorist does not anticipate being able to buy new cars or tires within any reasonable time, and apparently already is taking steps to conserve them by eliminating unnecessary driving. Therefore, the outlook for the industry's principal commodity, gasoline, becomes increasingly complicated.

These conclusions are indicated by the sharp dip in gasoline consumption during February. Production of 12,131,000 barrels of gasoline during the week ended February 28 was the lowest since early April, 1941, but 1,323,000 barrels went to storage. For the month of February refiners produced 88,360 barrels less gasoline each day than in January, while the daily rate of additions to stocks rose to a level 88,815 barrels higher than in the previous month. This would indicate that February consumption was off 177,175 barrels (7,341,350 gallons) per day from the January rate.

Result: an all-time high volume of motor fuel in storage at the end of February. With so many critical shortages, this should be of great satisfaction. To the contrary, however, the gasoline surplus is the cause of much worry. Tanks were running over at a number of Gulf Coast refineries, yet the industry must keep operating to meet the demand for residual fuel oil, and so gasoline keeps pouring forth. With the exception of East and West Coast regions, where shipping difficulties are creating scarcities, the problem is what to do with mounting gasoline surpluses.

Tanker Losses Ahead of New Launchings

TWENTY-THREE tankers totaling 224,400 deadweight tons had been sunk off the East and West Coasts and in the Caribbean Sea up to February 18, according to Navy announcement. While these represent serious losses, the impact of war on oil transportation has not been in terms of sinkings alone. Even greater losses in tonnage available to handle domestic requirements have occurred through transfer of tankers to the Navy and slowing up of deliveries due to convoys, port regulations, rerouting and other factors.

Net result has been to change the tonnage picture almost overnight from that of relatively satisfactory to one of serious shortage. The situation is due to become more acute, for boats are being sunk faster than they can be built. Approximately 20 of the lost tankers have been sunk in the last 36 days covered by the report, at which rate 200 would succumb to submarine attack in 12 months. Current construction program calls for the launching of but half this number during 1942.

Gasoline Disposal Not Rationing Is Problem

IN THE recommendations of the Office of Petroleum Coordinator to the War Production Board on the number of wells which should be drilled by the domestic oil industry in 1942 *(see pages 14 to 19,* THE OIL WEEKLY, *March 2)* appears information which will be most enlightening to oil producers.

Many have had the idea that the "ace in the hole" on the oil business was possible rationing of gasoline for civilian use. It has been thought that such rationing would go a long way to solve the possible problem of an oil shortage if drilling was reduced to the irreducible minimum.

Civilian Demand Out

But the OPC report (written before the loss of refining facilities in the Netherlands East Indies) tuned out completely civilian gasoline demand and even fuel oil demand and still predicted a daily crude demand next year of 3,600,000 daily for essential war needs, and, contemplating fuel-oil demands, calculated a continuance of demand on the current basis, gasoline rationing or no gasoline rationing.

Let us quote from the report (the italics are those of the editor):

"The current demand for domestic crude-oil production is close to 4,100,000 barrels per day which amounts to nearly 1½ billion barrels per year. Because a large portion of the products from this volume of crude finds its way into civilian uses not directly related to the war program, *it is not widely understood that much of the production is necessary to supply the constituents of the four petroleum products considered to be of greatest direct importance to the war program;* namely, (a) aviation gasoline, (b) aviation lubricants, (c) toluene, and (d) synthetic rubber.

1⅓ Billion Barrels a Year

"It has been estimated that nearly 2,600,000 barrels per day of crude will be needed to produce the requirements of these essential products for this year. With the completion of additional units in 1943 for the manufacture of the four critical petroleum products, the crude requirements will amount to almost 3,600,000 barrels per day, or over 1.3 billion barrels per year, which is equal to 88 percent of the current volume of production. This quantity of crude will be required irrespective of the demand for ordinary petroleum products such as motor gasoline and fuel oil, which would in effect be produced as by-products of the four

critical military products. It therefore becomes apparent that *any possible curtailment of civilian consumption of gasoline or fuel oil would have a relatively small effect upon crude-oil requirements.*

"There has been much loose talk of the possibilities of reducing crude-oil requirements by restricting so-called non-essential civilian consumption of motor fuel. While admitting that some non-essential uses of gasoline could be eliminated without serious consequences, yet there exists considerable doubt as to the extent to which civilian consumption of motor fuel could be limited without jeopardizing essential industrial activity. It is believed that *essential* needs for petroleum will actually increase beyond the current level of production. *The controlling factor in the matter will be fuel oil, and, irrespective of the effects of the rubber or automobile shortages or of possible artificial curtailment on motor fuel consumption, the essential needs for fuel oil will likely require the maintenance of crude-oil production at or above the current level.* The crux of the matter is simply that limitation of crude-oil production through restriction of gasoline consumption would seriously affect the supply of fuel oil, for, with the essential requirements of other products, fuel oil yields can be shifted only moderately, probably a maximum of 5 percent on the total volume. The supply of fuel oil is "tight" at this time, and any substantial restriction in use would soon raise other important problems concerning critical materials and would also seriously affect essential industrial operations."

Already a Major Problem

Now the purpose of quoting from this OPC report is to point out that not only will there be a heavy crude-oil demand, which all of us had contemplated, but that due to the shipping situation between Gulf ports and the Atlantic seaboard, *the question of disposal of gasoline will be a major one.* In fact we can go further and say that *disposal, not rationing, already is a major problem.*

Anyone who suggests that the amply supplied sections of the country ration gasoline because other sections are short as a result of shipping difficulties, *only adds to the problem of getting rid of gasoline which must be produced as a by-product* and such a suggestion has about as much basis of fairness or common sense as would be involved if the publisher of THE OIL WEEKLY wired and asked the Secretary of the Interior to undergo an operation because the publisher suffered from appendicitis.

It's OPC's Not Ours

DUE to the typographical handling of the article entitled "OPC Says 19,300 Wells Will Meet '42 Requirements" beginning on page 14 of THE OIL WEEKLY of March 2, the editors have received some compliments from readers on "a masterly presentation of some facts most requisite before any determination could be made of the necessary number of wells for 1942." The editors blushingly admit that they had nothing to do with the story itself—that the entire five pages are verbatim from, and constitute the entire text of the official report from OPC to WPB. This is the long awaited report telling how much production we can expect by years from present producing wells for the next five years. The chart showed how production would drop if no drilling at all were done. (Some of official Washington had recommended NO wells for the next two years.) And one line on the chart showed what would happen if no exploratory wells were drilled. We commend it to readers as something to be saved and referred to in the future.

• • • *Russian broadcasts, placing the German consumption of petroleum products in the Russian campaign at 1,500,000 tons (10,481,000 barrels per month) say that the German supply is failing and that German forces are suffering thereby.*

Now Cartridge Cases From Tubular Stock

STILL further reduction in the amount of tubular goods available for other than direct munitions use is forecast by the experiments now under way with steel cartridge cases for artillery shells in sizes ranging from 20 mm. to 105 mm. Extensive tests are reported to have demonstrated the suitability of steel cases under service conditions, and general change over from brass and copper to steel is expected to follow the completion of educational contracts already let.

Raw material used for forming the cartridge cases will be drawn tubular stock in gauges and diameters finding application in heat exchangers, coils and similar oil-field equipment.

Possible hope for oil industry tube requirements appears only in the fact that such use of steel would free a like tonnage of brass and copper, a part of which might become available for refinery and other oil processing needs.

Here Are Some Savings from Auto Ban

CONVERSION of the automobile industry is saving great quantities of strategic military materials, otherswise scarcities in the nation would indeed be extremely critical. WPB has released some interesting facts on this subject, which we have translated into yearly terms on the basis of 1941 automobile manufacturing.

For every 24 autos we are not making this year we have saved steel and rubber for a single 27-ton medium tank; 187,500 tanks in year.

For each automobile we are not making this year we have saved enough tin to coat 1000 cans in which to put food for our soldiers and sailors; 4½ billion cans annually.

For every 700 automobiles we are not making this year we have saved enough aluminum—used in pistons and miscellaneous parts—to make one fighter plane; 6428 per year.

For each automobile we are not making this year we have saved enough nickel to make 100 pounds of nickel steel for armor plate, projectiles, and armor-piercing bullets; 450 million pounds a year.

For each automobile we are not making this year we have saved enough zinc and copper to make brass for 2400 brass cartridge cases for the .30 calibre ammunition used in our machine guns and our Garand semi-automatic rifles and our Springfields; 10,800,000,000 cases a year.

For every automobile that is not made this year we will have saved great quantities of steel and nickel and rubber and chrome and zinc and copper and tin and aluminum and other materials—saved them to make the weapons we must have before we can have victory.

WPB might also have mentioned the factory facilities and workers made available by conversion of the automobile industry.

• • • *Although completions in February remained 9 percent above that month a year ago, the rate is due to drop below the level of last year soon. Rigs in operation March 1 were 40 percent fewer than the first of this year. Therefore, a materially slackened completion is indicated, whereas 1941 had an upward trend following the first few months.*

☆ ☆ ☆ ☆ WASHINGTON ROUNDUP ☆ ☆ ☆ ☆

By B. F. LINZ
Washington Correspondent

DEVELOPMENTS in Washington this week indicated that the oil industry is beginning to feel the full impact of the war in every sector of operations.

As Secretary of the Treasury Morgenthau urged the House Ways and Means Committee to eliminate the percentage depletion allowance, double the tax on gasoline and make even further increases in the levies on transportation and lubricating oil, in addition to higher income and corporation taxes, the industry was urging OPA Administrator Henderson to give it another and badly needed increase in prices in the Atlantic area.

Refinery and production also felt the pinch of transportation deficiencies, which led OPC to order a reduction in the March allowables for four of the five southwestern states in District 3.

At the same time, a committee of the war industry war council reported that the industry will have to revamp its whole structure to meet the needs of war.

The threat of rationing of gasoline drew closer as OPA revealed that motor-fuel stocks on the Eastern seaboard are beginning to decline because of the diversion of facilities from clean service to the movement of oils.

Of all the developments, the Treasury demand for elimination of the depletion allowance, while fully expected, was viewed as the most serious. The secretary's recommendation was immediately challenged by members from the producing states, who indicated they would make a stiff fight to defeat it. It is expected that the industry itself will be heard on the question, probably on March 16.

Determined not to let the East suffer alone, OPC this week called on the industry nationally to develop methods for the equalization of transportation facilities. Rationing, if adopted, will probably be applied nationally, but the oil coordinator still is anxious to avoid that step, which would lead to development of seriously dangerous stocks of gasoline for which there would be no market whatever.

But from a different angle—that of conserving rubber—Price Administrator Henderson told a Senate committee during the week that rationing of gasoline should be instituted.

Treasury Department Terms Oil Depletion Allowance "Special Privilege"

Three-way Approach Developed to Shortage Problem

WPB Again Rejects Pipe Line to East Coast

PIWC Says Industry Must Be Revamped for War

☆ OPC ☆

Steps Suggested to Lessen Shortage

A three-way approach to the problem of the East Coast shortage was developed during the week by the industry war council and the coordinator.

As seen by the council and OPC, the progressive steps to meet the situation are:

Reimposition, but on a national scale, of the curfew on filling stations, which Ickes on March 5 said he would act on immediately, with a possible closing of stations on Sundays,

Restrictions on deliveries to stations, and, if unavoidable,

Rationing.

Still seeking to avoid the final step, Ickes said all other methods of keeping the country's automobiles going would be thoroughly explored. There is a difference of opinion in the industry as to the need for rationing, he disclosed, and there is also a difference of opinion on the question of Sunday closing.

The coordinator emphasized that if rationing is adopted, it will be "equitably distributed" throughout the country—in other words, will be national. It will not only set the amount of gasoline which an automobolist may secure, but it will also set up priorities so that essential services may be continued.

Later Ickes explained that any plan recommended would take cognizance of local conditions of supply, particularly where refinery operations result in readily available stocks.

"If it is necessary to make recommendations to Mr. Henderson for rationing," he said, "the OPC naturally will consider the question of availability of petroleum products. It will take into account the fact that in refinery areas large stocks of petroleum products may accumulate owing to the unavailability of transportation. Any plan for rationing which we might recommend will recognize this fact.

"It will take some time to print ration cards," he said, in discussing the future possibilities. "Originally we were going on the theory that if there had to be rationing we would do it and had cards drawn up. Henderson and OPC are working on a new card and have agreed on the type."

Whether rationing will be necessary, he said, is still debatable. In some areas rubber restrictions have reduced consumption, B. L. Majewski reporting that in Chicago gasoline purchases have dropped 18 percent.

"If we get a substantial decrease

it may postpone rationing," he admitted.

The coordinator emphasized the necessity of an equal distribution of transportation facilities so that the East need not suffer alone, and OPC disclosed extension of Recommendation No. 33 to the entire country.

Under the extension order, special industry subcommittees may be set up in each of the districts or in two or more districts jointly, to compile and analyze information regarding supply and demand and transportation facilities, on which plans are to be prepared to determine the amounts of crude and products and the transportation facilities available to the district involved to meet military, war industry and essential civilian needs, and provide for the exchange, loan, sale, lease or pooling of oil and products and of production, transportation, refining and storage facilities.

The subcommittees are to have authority in cases of emergency arising pending the approval of appropriate plans, to coordinate and arrange for the sale, exchange or loan of oil and products among the various operators.

It was emphasized that the extension order is not to interfere with the operations of the District 5 marketing committee, acting under Recommendation No. 29, but that committee's action "should be pressed forward aggressively in a continuation of the effort to alleviate supply difficulties in Pacific Coast areas."

East Coast Trouble Upsetting Industry

OPC officials disclosed that the transportation situation has already resulted in a considerable dislocation in the industry, which was evidenced by orders revising the March production recommendations issued last month.

Ickes reported that East Coast stocks continued to decline, and now are 10,744,000 barrels below those of a year ago. He disclosed also that the strain is beginning to be felt by gasoline and that "from this point on gasoline will begin to decline."

The East Coast situation has backed up oil all the way to the wells, it was revealed by orders reducing the March allowables for the Southwestern states.

While supplies in the East continue to diminish at an accelerating rate, those on the Gulf continue to pile up and it is proposed to reduce Southwestern production by approximately 10 percent from the original estimate for the current month in the effort to prevent a storage glut.

The proposed reduction in output, it was explained, represents the reduction in available transportation facilities.

In a telegram to the regulatory bodies of the five states affected, Ickes said "the situation shows no prospect of immediate improvement, so in order to balance crude oil production with available transportation facilities and to avoid filling crude and products storage to distress levels, it is advisable to reduce the March crude oil production of District 3 by 204,100 barrels daily below production rates recommended to supply unobstructed demand.

"This necessary reduction in crude oil output," he said, "should apply to fields other than those from which the entire present production is required for aviation gasoline, toluene, butadiene and aviation lubricants."

Under the order, the daily production for Arkansas will be left unchanged at 71,500 barrels, but Mississippi will be cut from 55,600 to 53,100, Louisiana from 330,000 to 314,700; New Mexico from 114,500 to 100,200, and Texas from 1,510,600 to 1,338,600.

The weekly OPC report on tank-car movements into the Atlantic seaboard area showed a total of 10,073 cars loaded during the week ended February 28, compared with 10,162 cars during the preceding week.

The total movement was about 2,266,425 barrels, or an average of 323,775 barrels per day, a slight decline from the preceding week's 2,286,450 barrels, or a daily average of 326,638 barrels, it was stated.

OPC officials explained that the drop in the final February week was due to the fact that many of the more than 2000 additional cars which entered service the previous week had not had time to be returned to supply points for reloading. Some of the cars, it was said, are lifting oil at points as far distant as Texas for movement to the New England area, requiring a turnaround time of 18 or 19 days.

It was also disclosed on March 6 that tank-car companies have begun to convert a number of ordinary tank cars for the transportation of liquefied petroleum gases for 100-octane gasoline. Undertaken a month ago at the request of OPC, the experiment has reached a point where the first converted car received the approval of the tank-car committee of the technical division of the Association of American Railroads and was authorized for use by the Interstate Commerce Commission.

☆ WPB ☆

Oil Men to Check Revised P-98

Refusing to take hasty action simply because OPC had been dilatory, WPB officials last week suspended action on the coordinator's recommendations for revision of Preference Rating Order P-98, which expired February 28, ordering extension of the original order until March 15 to give time for study of the OPC suggestions.

Although when the order was originally issued it was specified that it would expire at the end of February, it was not until late in the afternoon of February 27 that the OPC sent its recommendations to WPB. At the latter organization it was declared a study of the new order could not be completed in the few remaining hours before its expiration, nor would it be signed without such study.

In the two weeks for which the order was extended, it is probable that a number of controversial points will be cleared up and a considerably improved P-98 eventually issued. It is probable that the new order will run for about six weeks, in which time a more permanent order will be developed to avoid the uncertainty in the industry created by a series of short-term orders.

But the next order, it was indicated, will be prepared and sent to WPB in ample time for study and consideration.

Meanwhile, copies of the OPC recommendations for revision have been sent to members of the industry for comment, and they have been asked to submit their suggestions for improvement by March 10 in order that they may be studied for incorporation in the new order which is to be issued by March 15.

Rejects East Coast Pipe Line Again

The oil-starved East this week was left to work out its own salvation when the War Production Board rejected the application of OPC for construction of the Texas-New York pipe line.

Rejected twice last year by the Old Supply Priorities and Allocations Board, the project was revived by Coordinator Ickes last month when tanker facilities melted away under diversions to military use and enemy submarine attacks. In turning down Ickes' application, WPB accepted the SPAB ruling of last November that the value of the line as a defense project was not great enough to justify the high priority ratings that would be necessary, and pointed out that materials shortages since that time have increased rather than decreased.

As a result of the board's action, the East will have to depend upon such tankers as can be kept in operation, with their speed cut down by the necessity either to take refuge in harbor at night or travel in convoys, and on railroad-tank-car movement. The rail movement is seen in some quarters as near the maximum which can be handled by the roads under the pressure of war traffic.

Oil Trucks Released

Release of oil-tank trucks recently frozen in the hands of manufacturers was ordered March 2 by WPB in an effort to relieve the strain on the railroads.

In telegrams to manufacturers, J. S. Knowles, director of industry operations, authorized them to release "all tank vehicles for transportation of petroleum products, including bodies, trailers, and chassis," at the same time explaining in Washington that the freeing of railroad tank cars for essential long-haul use will result from putting more trucks on the road.

☆ TAXES ☆

Industry Faces Crucial Fight On Depletion Allowance

A tax program which would raise $7,610,000,000 and cost the oil industry and those engaged therein several hundred million dollars was laid before the House Ways and Means Committee by the Treasury March 3.

From the standpoint of the industry the outstanding feature of the program was the proposal to eliminate the percentage depletion allowance, which, it was estimated by Secretary Morgenthau, would develop a revenue of $80,000,000 a year.

However, depletion privileges would not be entirely eliminated, for the department suggested that if the committee wished to continue an allowance for operators who developed properties on the basis of depletion, a rate of 15 percent be provided for those who charged costs to capital account and a rate of 5 percent for those who charged them to expense.

The department also made a proposal for the granting of depletion allowances for new discoveries, but recommended that the existing option to capitalize or expense intangible drilling and development costs be eliminated and hereafter be required to be charged to capital account.

Under the Treasury program, income taxes of individuals with net income up to $10,000 would be more than doubled over this year, and lesser increases would be made on higher incomes. No changes would be made in the personal exemptions, but the earned-income credit would be eliminated and married couples would be required to file joint accounts. A withholding tax of 10 percent on salaries and wages was recommended as a means of more easily collecting a part of the new income taxes, and Morgenthau asked that it go into effect next July 1.

Current normal rates for corporates would be unchanged, but surtaxes and excess profits taxes would be markedly increased. Taxes on telephone bills and on telephone, telegraph and cable messages would also be increased.

More directly affecting the oil industry alone, however, the Secretary proposed that the tax on pipeline transportation be raised from 4½ to 10 percent, the tax on gasoline be increased from 1½ to 3 cents per gallon, and the tax on lubricating oils be advanced from 4½ to 10 cents per gallon.

It was estimated that the increase in rates would result in an added revenue of $18,700,000 from pipe lines; $242,200,000 from gasoline, and $49,900,000 from lubricating oil.

"Example of Special Privilege"

Morgenthau told the committee that the depletion allowance is an "example of special privilege."

"At the present time," he explained, the owners of oil wells are allowed to deduct so-called percentage depletion or cost depletion, whichever is higher. Percentage depletion consists of a certain percentage of gross income (27½ percent in the case of persons having an economic interest in oil and gas properties), the deduction being limited to 50 percent of the net income from the property. Under this arrangement percentage depletion goes on even after 100 percent of the cost is recovered and may substantially exceed depletion based on cost.

"In 1937 the President and the Treasury recommended the elimination of percentage depletion, but no action was then taken. The war has intensified the necessity for eliminating any such special favor to one group of taxpayers. The removal of this special privilege would yield $80,000,000 a year.

"One of the reasons asserted in behalf of percentage depletion for oil and gas properties is that it stimulates exploration for such properties," Morgenthau said. "If this is a special objective, it would be better achieved by a special depletion allowance to those who do explore without indiscriminate extension of the same favor to all owners."

The Treasury's position on de-

pletion was questioned by Representative Disney of Oklahoma, who expressed the fear that the effect of its proposal would be to discourage new discoveries.

With the East Indies oil lost to the United Nations and the possibility of the loss of the Iraq and Iran fields, he pointed out, more and more dependence will have to be placed upon American production.

Asked directly if a cut in the percentage allowance would not mean less oil produced, the Secretary avoided a definite answer by saying that he could not understand why any man should be allowed to deduct 27½ percent year after year, after the well has been paid for.

Disney explained that he was not concerned with the details, but rather with the general policy of keeping up the production of oil. The Secretary said that if the situation became such as to make it necessary to encourage production, the problem could be handled in the same way as the War Production Board met the copper-production problem—by paying a higher price to the marginal producer.

The Congressman, however, maintained that there is a vast difference between copper mining and oil production, because if the well owners pull up their pipes the well is gone forever.

"What we are trying to do is to close the loopholes and end special privileges," Morgenthau declared.

Disney retorted that it was all right to continue to describe the situation as "loopholes" and "privilege treatment," but merely saying so does not necessarily make it a fact.

Propose Cost Basis

Morgenthau was followed by Randolph Paul, tax adviser to the Treasury, who discussed in greater detail some of the subjects touched upon by the Secretary.

Paul explained that under the Treasury's recommendation for discontinuance of the allowance for percentage depletion, taxpayers would be permitted to obtain depletion only on a cost basis.

"If the committee desires to continue some allowance for those taxpayers who have developed properties in the belief that percentage depletion would be obtainable," he said, "we suggest that this might be accomplished as follows:

"For oil and gas properties which became productive prior to January 1, 1942, percentage depletion should be permitted at a rate of 15 percent of the gross income from the property in the case of those taxpayers who elected to charge intangible drilling and development costs to capital account in prior taxable years.

"Taxpayers who elected to charge such costs to expense in prior years should be limited to a percentage depletion allowance of 5 percent, the 10-percent difference being approximately the advantage obtained by this group of taxpayers through expensing such costs."

Paul also made proposals for a tax advantage as an inducement to new discoveries, suggesting the following formula:

A taxpayer who in the future discovers a new pool of oil or gas would obtain percentage depletion with respect to all production from his entire acreage within such pool at the rate determined upon, but not to exceed 27½ percent. In the determination of a new pool, each new zone or horizon would be considered a new pool. Such allowance of percentage depletion would be limited, however, to those taxpayers who contribute substantially toward the cost of the exploratory well. Contributions would be deemed substantial if equivalent to 25 cents or more per foot of hole drilled for wells less than 6000 feet in depth, and 50 cents for wells in excess of such depth.

"Finally," Paul said, "the existing option to capitalize or expense intangible drilling and development costs should be eliminated for both oil and gas wells, and hereafter such costs should be charged to capital account."

☆ PIWC ☆

Says Industry Structure Must Be Revamped for War

A three-point program for operation of the oil industry through the war was laid before the industry war council at its monthly meeting March 3 by its committee on petroleum economics.

In a report on war-time versus peace-time economics for the industry, Dr. Robert E. Wilson, chairman of the committee, held necessary:

Conservation of materials, manpower and transportation.

Safeguarding against inflationary prices.

Definite relaxation and revision of the anti-trust laws.

At the same time, he said, there are nine problems looming most importantly among the questions with which the committee and its subordinate groups should deal, defining them as:

1. Prepare an estimate of military, industrial and civilian requirements for petroleum products for 1942 and 1943, the schedules to constitute the fundamental basis for many other studies.

2. Tabulate the existing and potential sources of supply by regions and with relationship to available crude supplies and by-products needed for military use.

3. Prepare for the council a supply program to meet the estimated requirements, drawing such requirements from those sources which would afford the greatest efficiency in the use of materials, man-power, transportation and time, without adversely affecting the supplies of by-products needed for the war.

4. Prepare an analysis of the Western Hemisphere transportation situation with reference to the existing tanker shortage, studying possible remedial measures and the most efficient methods of using new and supplementary facilities.

5. Analyze estimates of civilian and industrial requirements from the point of view of the necessities of consumption, realizing that oil products are essential to millions in the functioning of the war effort.

6. Analyze the effect of major new projects with the view of comparing with possible alternatives.

7. Study future dislocations of the industry likely to result from changes in demand as between products and regions, and prepare schedules of action in advance to meet these conditions.

8. Study the economics of the rubber situation in its effect upon the petroleum industry.

9. Study the economics of administered prices in their bearing upon operating results and national interests, and explore the possibilities of devising methods for freezing price levels without creating undesirable rigidities in inter-product and inter-regional price relationships.

"Events of recent weeks indicate

[*Continued on page 34*]

Prospecting Tactics in a Total War Economy

By E. E. ROSAIRE
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IN a previous article published in The Oil Weekly, February 23, 1942, Dr. Rosaire outlined prospecting strategy in a total war economy and in the accompanying article he suggests a coordinated prospecting program utilizing and combining the values of geology, geophysics and geochemical research. His nine-step program does not make a choice between the indirect and direct approaches but rather proposes tactics based upon their coordination with the consequent minimization of the shortcomings peculiar to each.

☆ ☆ ☆ ☆

WE HEAR of civilian discontent with the initial lack of success by our armed forces. With a good measure of justice, the military rejoinder is to the effect that had they received reasonable support in the days of peace, they would have been better equipped and better prepared to engage in war when that came, and that today's astronomical appropriations will not buy yesterday. Even so, in the final analysis we cannot accept that answer, for they *must* carry out their missions of safeguarding our national interests, even if that verges on the impossible. The Marines on Wake Island and MacArthur in the Philippines rose to just such heights.

To the rest of the petroleum industry we prospectors bear a relationship much like that which the military bear to the rest of our nation. When there is plenty of oil, prospecting declines to a bare minimum, and we prospectors become a drug on the market. When a shortage of petroleum threatens, prospecting operations are hurried willy-nilly to a peak, and we must discover oil no matter how poorly-manned or how ill-equipped are our field crews and technical staffs. Thus, in 1940, domestic prospecting was severely curtailed while foreign prospecting practically had ceased. As appropriations dwindled, competent men were released to be taken up by the growing armed forces and armament industries. In 1941, increased activity resulted, and we found ourselves with a shortage of trained men and equipment at a time when the armed forces and the armament industry were bidding more than ever for competent technicians and pertinent technical apparatus and materials. Now we are given to understand that the sky is the limit on prospecting and that new reserves must be found. Like the military, we too can make the point that we cannot buy yesterday, but that answer did not hold for Pearl Harbor, and will not hold for the day after tomorrow. Today, we prospectors had best make sound plans for the imminent tomorrow.

Our main theatres of prospecting are in Texas, Louisiana, Oklahoma, California and Illinois. There we have established impressive reserves of petroleum. Of these, however, only California and Illinois are close to major centers of consumption and export. Our major reserves in Texas, Oklahoma and Louisiana are far removed from the Industrial Triangle and the Atlantic Seaboard, the nearest of those major centers of consumption and export. For deliveries there, the Mid-Continent and the Gulf Coast are dependent to a major degree upon coastwise tanker operations, which, if not diverted altogether for naval operations, certainly will be conducted at a much lower efficiency because of the hostile interference which already has appeared off our Atlantic Seaboard. A petroleum shortage thus is developing in our major consumption centers, one which will not be alleviated by additional discoveries in Texas, Oklahoma and Louisiana, our main theatres of prospecting. It behooves us as a profession, then, to direct our attention to the discovery of petroleum in favorable geological provinces which have existing and adequate outlets (other than tanker operation) to our major consumption centers. Such strategically located areas thus become decisive theatres of prospecting, ones in which it is probable that we will be required to establish petroleum reserves of adequate magnitude. Therefore, we must appraise our ability to solve that problem of major magnitude.

Among these decisive provinces are the Michigan Basin, the Appalachian Geosyncline, the Warrior Basin, Eastern Canada, the Pacific Northwest, Ohio, Tennessee, Georgia, and possibly Florida as well as other strategically located areas. Production has been established in some of these provinces, but the extent of reserves there established to date is only a measure of what reasonably can be anticipated. Within these areas, discoveries could have been expected to be as profitable as those which took place in Illinois, yet they remain on the inactive list, for no similar prospecting success has taken place. If we did not fully evaluate the petroleum possibilities of those areas in the piping times of peace, what is there which would lead to the conclusion that we can do so under the pressure of emergency, facing shortages of steel, trained men, and technical supplies? There is little reason for sanguinity in view of the most recent venture into one such inactive area, for the Mississippi campaign, launched after Tinsley with the reflection seismograph (generally considered our most potent prospecting tool and then well along in development), has to date

yielded only two fields, neither as yet of major magnitude. We had better ask why today, rather than wait for an outsider to sit in judgment the day after tomorrow, for today we still can buy tomorrow.

Few of us realize the extent to which our present prospecting practise is founded upon subsurface control. From the standpoint of mapping subsurface structure with a high degree of precision, the reflection seismograph has done its finest work in those areas with the highest density of subsurface information. That is the case on the Seminole Plateau, where the reflection seismograph has mapped with surprising accuracy structure not only of very low relief but also of very limited areal extent. Such degree of precision has been possible only because the high density of that subsurface control made possible the accurate translation of reflection events into subsurface datums by correction for local lateral variations in seismic velocities.

Too Many Disagreements

Elsewhere, the reflection seismograph has been limited generally to confirmations on structures of appreciable or moderate relief. Even so, there have been too many cases of disagreement as to the specific characteristics of some seismic structures within those ranges of magnitude. In such cases the situation approximates that with which we were confronted frequently in the later days of Gulf Coast refraction prospecting, for we earlier seismic prospectors were the first to be plagued by "rubber domes."

Another point worth comment is that, as the reflection seismograph is goaded closer and closer to a satisfactory substitute for the drill, the technique loses mobility and thus its utility in reconnaissance. A year or two back one expert commented on the excellent coverage his reflection crews then were securing in California, almost three miles a day. Contrast that tortise-like progress with the fifty thousand plus acres per day credited to the refraction seismograph when the highest discovery rate on record[1] was established. No matter how excellent our expected heavy tank is sure to be, it will not serve as a scout car. It not only will be too slow, but also it will be too valuable to be used except on specific missions of primary importance.

There exists far more serious limitations upon all structural prospecting, and so upon the reflection seismograph method as well. As has been pointed out, of the "elephant" pools[2] of the United States, about half are "stratigraphic" in nature, traps in which reservoir closure results from a lateral change in or disappearance of the reservoir rock itself. The type case is the giant East Texas oil field, where the up-dip closure results from truncation and overlap of the Woodbine sand on the west flank of the Sabine Uplift. In such cases, reflection depth measurements *per se* do not reveal the presence of the trap, though, in the presence of adequate subsurface control, differential depths to reflecting beds above and below the reservoir rock may furnish pertinent clues to the presence of a vital wedge. However, the discovery of such stratigraphic traps by the reflection seismograph is at best a possibility rather than a probability.

Bit Must Penetrate

One other point must be made. Except for the case of high petroleum pressure accumulation in the reservoir, the drill itself is a relatively insensitive device for discovering petroleum. Thus, the bit actually must penetrate the reservoir before the contents can be recognized, giving rise to the "farmer's sand" tradition[3]. As an illustration, only three years ago the Wilcox of the Gulf Coast Embayment was considered thoroughly tested when the first salt-water sand was encountered therein, even though the Eocene Wilcox was known to consist of a thickness of 2000-4000 feet of alternating sands and shales. Today the Wilcox possibilities are not considered completely evaluated until the test well has drilled through the full Wilcox section into the underlying Midway.

Again, even when the reservoir is penetrated, there are not infrequent cases on record where even the assistance of sidewall cores and electrical logging have failed to reveal the presence of petroleum of economic significance in the reservoir rock, and such test wells unwittingly have been abandoned as dry.

We see, then, that although structural prospecting has found an effective substitute in the reflection seismograph for the very costly drill, structural prospecting by subsurface geological and reflection seismic methods has attained its present excellence[4] only by virtue of the tremendous backlog of subsurface information rapidly accumulating in those parts of the United States where that technique (structural prospecting) has been most intensively applied. Elsewhere the prospector does not have subsurface information to anywhere near as comparable an extent, and certainly today, neither the material nor the time required to set up the required backlog of scattered dry holes. Therefore, if relying upon the indirect approach of structural prospecting in "possible future" oil provinces, the prospector must hunt targets (i.e., structures) of such magnitude that the unknown errors in his reflection depth calculations are of secondary magnitude. Even so, such an approach has an inherent weakness, for not only is there no direct relationship between magnitude of structural uplift and magnitude of associated petroleum accumulation, but also and more serious, there are many otherwise prominent structures which appear to be barren of petroleum accumulations[5]. So, from the standpoint of discovering petroleum under the most favorable conditions of time, place and investment, the prospector must recognize that, in spite of its outstanding and accumulated success in parts of the United States, the indirect structural approach must be regarded as hardly otherwise than blind in one eye and displaying defective vision in the other.

Confronted by the accumulative importance of subsurface information in structural prospecting, it is obvious that the prospector should hesitate to go all out for structural prospecting in strategically located but inactive sedimentary provinces. And yet, what other course can be pursued?

A potentially important clue to a possible alternative follows from the reconsideration of prospecting history, as follows:

The first prospecting method was based upon the direct approach of hunting for visible seeps of oil and gas. After the success which led to its diminishing returns in the first decade of this century, this direct approach of looking for visible evidence of petroleum accumulation was succeeded by the indirect approach of looking for visible structure. About 1920, this second prospecting approach, in turn, yielded only diminishing returns. Since the prospectors had used and exhausted the searches for visible seeps and visible structure, the score, as to tries at least, then was even for both direct and indirect approaches.

This direct prospecting method has, to date, at least one major failure of record, the Gaspe Peninsula in Canada. The oil seeps in that area

attracted the attention of the early prospectors and led to a material amount of test drilling. Though to date some oil has been recovered, the amount is hardly of commercial importance.

Illinois Basin

A comparable failure of structural prospecting can be found in the material amount of shallow drilling on "coal highs" in the Illinois Basin. Those structures proved to be quite disappointing, for the Pennsylvanian structures generally were barren of petroleum and often were not reflected in the underlying Mississippian, where the major petroleum accumulation has been found.

Just as geological and drilling progress justified continued exploration in the Illinois Basin in spite of the illusory importance of the Pennsylvanian structures, in like fashion the recent developments in geochemical prospecting justify reconsideration of the petroleum producing possibilities of the Gaspe Peninsula, particularly in view of the strategic location of that geological province with respect to the Atlantic Seaboard.

In the United States today, however, practically all of the subsequent prospecting successes have been due to developments in the indirect approach alone, i.e., to the geophysical methods of mapping buried and so invisible structure. Only in the past few years has any real progress been made in the rejuvenation of the older direct approach, and, as yet, there has been no extensive application of those recent developments in that potentially important prospecting strategy.

The Direct Approach, Geochemical Prospecting

The direct aproach has been in general discard for the past generation, and the first step in its rejuvenation took the direction of more quantitative data. About 1930[6], a method was proposed which relied upon the analysis of soil gases (collected in shallow bore holes) for the lightest of the petroleum hydrocarbons, methane and ethane. Though tried in several petroleum producing provinces[7], the method was not reduced to general practice, for the operating and technical difficulties involved were such as to retard unduly the understanding and interpretation of the resulting data.

In more recent years, a different technique was introduced, the analysis of near surface soils and sediments for traces of the petroleum hydrocarbons[8]. This technique permitted the readier collection of more quantitative data, and the range of investigation was extended from methane and ethane to petroleum hydrocarbons of much greater molecular weight, such as decane and even higher. This sedimentary hydrocarbon technique has been under intensive investigation since 1936, and has displayed unanticipated effectiveness, particularly in outlining the areal extent of petroleum accumulation in advance of the drill. Recommendations made on the basis of sedimentary hydrocarbon prospecting have been confirmed not only in the case of structural accumulation, but also in the case of stratigraphic accumulations[9]. As experience accumulates, there is some data at hand which indicates the eventual possibility of predicting in advance the general composition of a petroleum accumulation.

These sedimentary hydrocarbon data appear to be closely related to the presence of petroleum accumulation. That conclusion is justified not only because of the growing success following test drilling on these geochemical anomalies, but also because these geochemical anomalies tend to disappear as the petroleum accumulation is depleted.

There also is an increasing amount of evidence that these sedimentary hydrocarbon anomalies are very closely related to certain types of geophysical anomalies without origin in geologic structure, but which frequently are associated with petroleum accumulation. The recognition of such an important relationship has resulted in the development of geophysical prospecting methods directed primarily at the discovery of non-structural anomalies for later evaluation by sedimentary hydrocarbon detail. These geophysical measurements of geochemical anomalies are particularly useful in reconnaissance, and, under favorable terrain and road conditions, have proved capable of rapidly evaluating large areas at very low costs per acre.

Depth

However, there is one important shortcoming associated with these geochemical phenomena. Though they are closely associated with the presence and areal extent of petroleum accumulation, and possibly also with its composition, as yet they do not appear to be related to the depth of that accumulation nor to the type of structure associated with the reservoir. Consequently, the prospector who plans to test a promising geochemical anomaly is at a loss as to the depth to which the test well should be scheduled.[10] This factor undoubtedly has played a part in the accumulated experience to date that these geochemical data have displayed greater utility in outlining the areal extent of already established production (i.e., where the depth factor was known,) than they have in locating discovery wells on geochemical anomalies where the significant leakage may have come from a depth greater than that penetrated by the test well.

This recognition of the two dimensional nature of near-surface geochemical phenomena led to a development of basic importance in sedimentary hydrocarbon prospecting, the introduction of geochemical well logging. Cuttings from the bore hole are collected and analyzed for their content of hydrocarbons and other significant constituents, yielding data which are plotted in the form of logs as the drilling continues. Though still subject to development, geochemical well logging has a record to date of two discoveries[11] which resulted when wildcat tests, officially abandoned as dry at the respective contract depths, were carried deeper to production on the basis of recommendations made entirely on the geochemical well logs.

The geochemical methods have been the subject of controversy for the past five years, controversy based to a large extent upon the conflict between theoretical expectations and experimental data of as yet empirical significance. In view of the actual confirmations and discoveries of record credited to relatively modest expenditures for these geochemical data in the past five years, the time for discussion has passed. The established reserves now credited to these new techniques are of a magnitude nearly sufficient to pay out their anticipated costs throughout their life. The time for their active utilization on a major scale has arrived, for, in their present stage of development, the geochemical methods are as far along as was the reflection seismograph in 1930-1931.

The Choice of Prospecting Tactics

Thus, the prospector has a choice of two known prospecting approaches in the decisive theatres of prospecting. He can rely upon the indirect structural approach in the face of an enormous handicap in the lack of subsurface data, or he

can rely upon the recent geochemical developments which have rejuvenated the first used direct prospecting approach aimed at the discovery of the petroleum accumulation itself. Both strategies display particular advantages and just as peculiar disadvantages. The direct approach of geochemical prospecting has a more fundamentally sound objective, but lacks depth perception. What point in making a test location on a first class geochemical anomaly, to abandon the test as dry at the depth limit of the rig, and have that anomaly confirmed years later by another prospector using the heavier rig and greater attainable drilling depths of the future? On the other hand, the indirect approach of structural prospecting, blind in one eye and with faulty vision in the other, also is, though to perhaps a lesser extent, lacking in depth perception to the pay sand. Forced to choose between these two strategies, the prospector will hardly be blamed if he rejects novelty in favor of the more orthodox but indirect approach of structural prospecting.

Perhaps a parallel situation can be found in the various schools of military thought which prevailed prior to the outbreak of hostilities in 1939. On one side were the orthodox, such as the French high command, who proposed to fight the next war as they successfully had fought the last. On the other side were those who held with Douhet, to the effect that the terror from the air alone would solve the destinies of nations. As it turned out, neither was right, and both were wrong. The initial successes of the blitzkreig followed not from a choice between these two schools of thought, but rather in the coordination which eliminated the shortcomings of each by pooling their strengths, thus effecting economy of force. That was DeGaulle's vision, for which he found no listeners among his colleagues and seniors of the time, and no later comfort in his opponent's ready and justified agreement.

A Coordinated Prospecting Program

The writer proposes, not a choice between the indirect and direct approaches, but rather prospecting tactics based upon their coordination with the consequent minimization of the shortcomings peculiar to each, a coordination which takes the following form.

The first step is the accumulation and utilization of all pertinent information, in particular that relating to market outlets and geology. By consideration of this information, generally favorable areas are selected, largely because of their promising geologic and economic properties, and so this first step is essentially a geologic and economic reconnaissance.

The importance of this first step cannot be underestimated, for worthwhile battle plans are not laid until the acquisition and digestion of all available information as to the resources, strength, dispositions and plans of the hostile forces.

The second step is reconnaissance by geochemical methods, to determine the existence and approximate areal magnitude of petroleum accumulation in the area selected. In areas of favorable terrain, this geochemical reconnaissance may take the form of geophysical exploration for non-structural anomalies, or may be a grid of wide mesh (one quarter to one half mile) soil sampling locations.

A program such as this in a likely area will be found to yield quite a number of geochemical anomalies, in fact, if carried out on a regional basis, a multitude of potentially significant anomalies will result[12].

It should be kept in mind that the objective of a prospecting campaign is not to discover all the oil fields in a given territory, but to discover *one* under the most favorable conditions of time, place, and investment, for the campaign then can be continued "on velvet."

So, having found a number or even a multitude of possible oil fields, the prospector again is faced with the problem of "high grading." Other local considerations now must be given weight, among which are available geological information, accessibility to markets, lease conditions, etc. All these considerations should play a part in the third step, the selection of the most favorably located geochemical anomalies which, in turn, are to be further "high graded" as follows:

The fourth step is the geochemi-

NINE STEPS FOR A

First High Grading

Geologic and economic reconnaissance. Collection of all pertinent prospecting data, accessibility to markets, geology, prospecting history, terrain, roads, lease conditions. Regional high grading.

Second High Grading

Geochemical reconnaissance, by geophysical measurements of non-structural variations when road and terrain conditions are favorable, otherwise by sedimentary hydrocarbon studies, using sampling grid with mesh of one-half mile.

Third High Grading

Consideration of results of geochemical reconnaissance. Choice of indicated favorable anomalies for geochemical detail. This choice based upon relationship to known geology and areal extent of anomalies. Local high grading.

cal detail of the recognized and potentially significant geochemical anomalies selected as above, and takes the form of a close uniform grid (one sampling location to each eighth or sixteenth mile) of soil sampling locations, as a result of which the areal extent and pattern of the geochemical anomaly is established.

The areal extent[1] of the anomaly if of great importance, because thereby the number and location of possible well sites is established, and, also, the pattern of the geochemical data plays an important part in the later structural detail.

This geochemical detail also can yield information as to the relative concentrations of particular sedimentary hydrocarbons, which should be evaluated qualitatively with a view to determining the possible composition of the accumulation (i.e., oil or gas). These two dimensional considerations make possible a fifth high grading which results in the selection of a few anomalies of sufficient importance to justify consideration of eventual test drilling.

However, as yet no information is at hand as to the depth at which the accumulation can be expected, nor as to the nature of the structure involved. This necessitates further investigation, as follows.

The sixth high grading is that of securing structural information by detail of the geochemical anomaly with the reflection seismograph. The solution of the structural problem will be facilitated materially by the available geochemical detail, which will have contributed pertinent information not only as to the shape and the areal extent of the anomaly, but also as to leakage patterns of the type which frequently have been found over the zones where petroleum accumulation is intersected by faulting. Since the areal extent of the anomaly has been defined by the sedimentary hydrocarbon detail, the reflection seismograph survey will be confined to the detail of that local area, to be extended therefrom only in the event that further structural information appears advisable in the solution of related geologic problems. The seismic traverses thus can be laid out to intersect at right angles any indicated possible fault zones, thereby securing the type of reflection data best suited for fault recognition and measurement. The reflection data should be secured from depths as shallow as possible to those well beyond the current drilling depths, or if not, then as deep as pertinent and possible.

The seventh step is that of careful study and analysis of the reflection data. Among the questions for which answers must be sought are the following: If evidence of closed structure is found, at what depth does the first evidence of uplift appear, and does the structural disturbance increase, shift, or disappear with depth? If no evidence of structure is found, is there evidence of convergence or wedging between reflection horizons? If such is the case, at what depth does that suggestion of possible stratigraphic closure take place, and is there evidence that certain reflecting horizons disappear in or close to such a wedge?

From these considerations, and in light of the available subsurface information, postulates can be made as to the nature and depth of a trap or traps within which petroleum accumulation might be found. These postulates then serve as possible solutions to the basic problem of the depth to the petroleum accumulation indicated by the geochemical data.

However, the prospector must keep in mind that even if these structural postulates are quite correct (as to the presence and depth of suitable traps), those traps may be barren, and the indicated petroleum accumulation may lie at a still greater depth, or, since not all lithologic zones are good reflectors, in traps not shown by the reflection data.

The eighth step, then, is the test of these possible structural answers to the depth of the petroleum accumulation, a problem which still is within the realm of the exploration department. Recourse should be had to a method in which important progress has been reported of late, the use of an exploratory or "slim-hole" test rather than the usual practise of rigging up heavy drilling equipment which will permit the use of fishing, test, and pumping equipment so characteristic of a "production" test.

This "slim-hole" is drilled, not with the objective of producing petroleum or even taking cores, but simply in order to get cuttings of the formations penetrated and to secure

COORDINATED PROSPECTING PROGRAM...

Fourth High Grading

Geochemical detail of selected anomalous localities, relying upon sedimentary hydrocarbon determinations using sample location grid of not more than one-quarter mile, possibly even one-eighth mile.

Fifth High Grading

Consideration of results of geochemical detail. Following geochemical detail, some of the anomalies selected in (2) will have broken down into localized anomalies of areal extent too small to justify immediate consideration. Geochemical detail data will show definite patterns for anomalies, indicating not only areal extents and shapes, but also presence and strike of associated faulting. On basis of these considerations, anomalies selected for structural detail.

Sixth High Grading

Structural detail using reflection seismograph, aimed at securing structural information from grass roots down either to basement complex or to well below probable drilling depth. Reflection detail laid out to take maximum advantage of patterns indicated by geochemical detail.

their electrical log. The cuttings are carefully collected and analyzed for composition, for micro-paleontological markers, and for petroleum hydrocarbon content.

These data, properly plotted as logs, then are available for the careful study which makes up the ninth and final prospecting high grading, for they may answer the question as to the depth of the petroleum accumulation indicated as present by the geochemical data. If the exploratory test has gone to current drilling depths without penetrating the full sedimentary column, and has not yielded evidence of petroleum accumulation, then the geochemical anomaly is not of current interest due to the still greater depth of its associated petroleum accumulation. If, however, the exploratory test has penetrated a petroleum accumulation, then the problem has been solved, and the prospecting objective has been achieved. The prospect then is turned over to the production department, who thus have available the information required for the proper choice of drilling equipment for the initial production test.

Seventh High Grading

Consideration of structural detail data. If no evidence of closed structure, reflection data examined for evidence of wedging or convergence. If evidence of closed structure results, that evidence studied for faulting, and increase or decrease of closure with depth. Decision reached as to location and depth of exploratory holes.

Eighth High Grading

"Slim-hole" evaluation. Cuttings studied to give logs based on composition, drilling time, micropaleontology and hydrocarbon content. After electrical logging, test hole abandoned. In case of anomaly of major areal extent, more than one exploratory hole may be drilled on prospect.

Ninth High Grading

Consideration of data from exploratory holes. Selection made as to prospects for production test, including recommendations of coring and probable production points, and the depth to which the production test should be drilled. Proven field turned over to production department for exploitation.

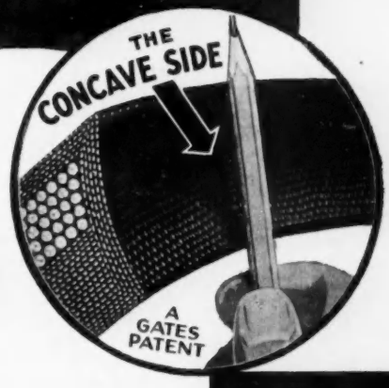
This program probably seems far removed from exploration programs now in general use. That description is correct, for those now current evolved one method at a time. As a result, prospectors in the United States rarely have been able to give consideration to setting up fully integrated prospecting programs, for, as new methods appeared, they were applicable only after the then popular areas had been prospected by the older methods. Consequently, the prospector in the United States was not in position to revise the exploration procedure if he found that, with the introduction of a new method, the cart was before the horse. There was no point in re-exploring an area simply because a new and less costly method could secure information comparable to that already at hand as a result of the exhaustive application of an earlier and costlier method.[13]

The comment may be made to the effect that this coordinated program of successive high grading is unduly complicated. Very probably that same comment was made by the French high command when they turned down DeGaulle's program for coordinated air and armored land action. To their discomfiture, their then competitors in the art of war did not share their views, and, in the final test, the more complicated program won decisive victories at remarkably small costs in surprisingly short times. Those who regard this coordinated prospecting program of successive high grading as unnecessarily complicated and involved will find themselves in similarly regrettable positions if a competitor of theirs is less unwilling to learn to write modern operation orders.

In this series of successive high gradings we see the application of the prospecting principle analogous to that of the economy of force in the art of war. . . . "The time and place of the main effort having been determined, men and means are conserved by reducing their employment in other directions to the minimum consistent with safety." In these days of shortages in trained men and in technical equipment, we cannot afford to use reflection crews on reconnaissance nor to explore outside the decisive theatres of prospecting. Even if the record shows that our prospecting efforts were stagnating, we are poor craftsman and even poorer Americans if, in this hour of crisis, our failure to take the initiative results in the immobilization of now so precious steel in poorly located wildcats and in pipe lines for which we could substitute by strategically located discoveries.

This coordinated program has outstanding advantages as compared to present practice. Throughout the series of successive high gradings, structure is subordinated to petroleum accumulation, which, obviously, is as it should be. The reconnaissance is left primarily to geochemical methods, which, operating in two dimensions, can high grade large areas at much less expense and in much less time than can the three dimensional structural methods. In that geochemical reconnaissance, the emphasis is upon the evidence for an indicated areal extent of possible petroleum accumulation, not upon the amount of closed structure. The structural detail is introduced at a point in the program where its contribution is of importance, and at a time not only when the expensive, slow, and cumbersome structural investigation can be restricted to given local areas, but also when vitally important areal and fault patterns are available to assist in laying out the seismograph profiles so to secure reflection data to best advantage. Since neither structural nor geochemical data (secured at the earth's surface) can supply a definite answer to the vital question of the depth to the petroleum accumulation, the solution

[*Continued on page 32*]



Make This Simple Test

It Will Show You A REAL SAVING *in Belt Costs!*

As a V-belt bends, you can actually feel its sides change shape! The top of the belt is under tension and grows narrower (see Figure 1, at right). The bottom is under pressure—therefore it widens. These stresses force a straight-sided V-belt to bulge in the sheave groove (Fig. 1), and this produces uneven wear on the belt sides, resulting in shorter life!

Now look at Figure 2. There you see how the concave side of the Gates Vulco Rope exactly corrects this bulging. It insures a perfect fit in the sheave groove with uniform side-wall wear and, therefore, longer life! It insures that the entire side-wall grips the pulley—heavier loads are carried without slippage—belts are saved and power consumption reduced.

Only belts built by Gates are built with the Concave side, which is a Gates patent.

What Happens When a V-Belt Bends

FIG. 1

FIG. 2

THE GATES RUBBER COMPANY

Engineering Offices and Stocks in All Large Industrial Centers

GATES VULCO ROPE DRIVES

Chicago, Ill. 549 West Washington
New York City 215-219 Fourth Avenue
Birmingham, Ala. 405 Liberty National Life Bldg.
Los Angeles, Cal. 2240 East Washington Blvd.
Denver, Colo. 999 South Broadway
Dallas, Tex. 2213 Griffin Street
Portland, Ore. 333 N. W. 5th Avenue
San Francisco, Cal. 2700 16th Street

☆ METHOD USED TO DETERMINE UNIFORM

THE following illustrations have been prepared by OPC and released by WPB to assist operators in determining uniform well-spacing patterns provided for in Amendment No. 3 of Conservation Order M-68, dated February 18, 1942. The well-spacing interpretations given by Amendment No. 3 were first published in THE OIL WEEKLY, page 57, February 23, 1942, issue, and are repeated here in connection with the illustrated well-spacing patterns subsequently released.

APPLICATION OF AMENDMENT NUMBER 3 TO ORDER M-68

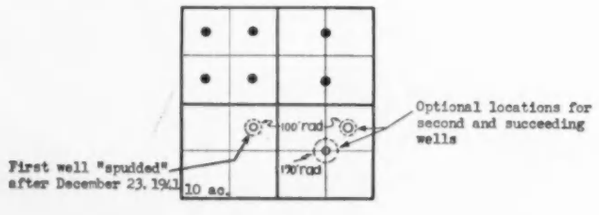
(d) Determination of Uniform Well-Spacing Pattern

(1) Subject to the provisions of (2) below, each well "spudded" subsequent to December 23, 1941, in any oil or gas field, other than a Condensate Field, on any proposed drilling unit consisting of not less than forty surface acres in the case of any oil field or of not less than 640 surface acres in the case of any gas field, shall be deemed to conform to a "uniform well-spacing pattern," for the purposes of paragraph (c) (7) and (8) hereof, where such well is drilled in accordance with the following terms:

PARAGRAPH (d) (1) (i)

(i) Each well shall bear the same geographical relationship with respect to the square drilling unit upon which it is to be located as all other wells drilled subsequent to December 23, 1941, bear to the respective square drilling units upon which such wells have been or are to be located; *Provided*, that subject to the provisions of (2) below, any well which is to be drilled shall be considered as conforming to a uniform well-spacing pattern where such well is to be located within 100 feet of the point at which absolute geographic identity would be attained or where such well is to be located within 150 feet of the geographic center of a square drilling unit; or

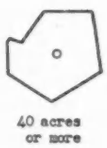
Paragraph (d) (1) (i)



PARAGRAPH (d) (1) (ii)

(ii) Where property interests (including leasehold or other property interests) in irregularly shaped tracts necessitate departures from square drilling units, a well may be located on any drilling unit consisting of not less than the prescribed number of surface acres (40 surface acres in the case of an oil field; 640 surface acres in the case of a gas field); *Provided*, that such well is drilled in conformity with the provisions of (2) below.

Paragraph (d) (1) (ii)

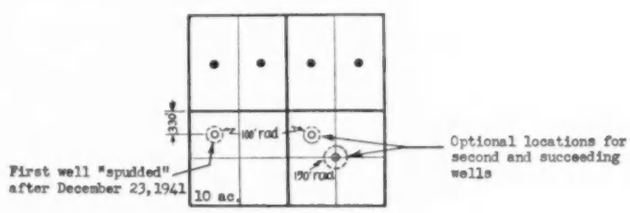


(2) No well "spudded" subsequent to December 23, 1941, shall be considered as drilled in conformity with a uniform well-spacing pattern unless:

PARAGRAPH (d) (2) (i)

(i) The proposed drilling unit upon which such well is to be located consists entirely of acreage which is not attributable to any well other than such proposed well. The acreage attributable to wells offsetting the proposed drilling unit shall be determined by assigning to such wells an acreage equivalent to that in the existing well density or drilling pattern contiguous to such wells. In the case of an oil field no portion of a drilling unit shall fall within 330 feet of an existing well; in the case of a gas field no portion of a drilling unit shall fall within 1320 feet of an existing well; and

Paragraph (d) (2) (i)



PARAGRAPH (d) (2) (ii)

(ii) The direct linear distance between any two

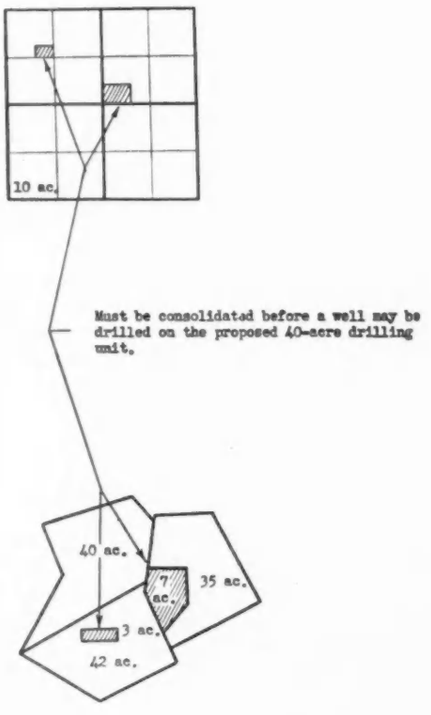
Paragraph (d) (2) (ii)

points which are farthest removed from each other on the drilling unit upon which a well is to be drilled does not exceed the length of the diagonal of a rectangle whose length is twice its width and which is equivalent in surface acreage to such drilling unit; and

PARAGRAPH (d) (2) (iii)

(iii) All separate property interests of less than 40 surface acres in the case of an oil field, 640 surface acres in the case of a gas field, or in tracts on which a well cannot otherwise be drilled by virtue of the provisions of this Order, surrounding the designated drilling location of any well, are first consolidated with each other, another, or other property interests to from a drilling unit (consisting of not less than 40 surface acres in the case of an oil field; 640 surface acres in the case of a gas field) on which a well may be drilled; and

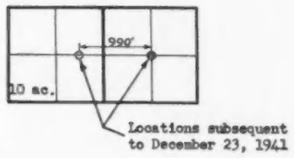
Paragraph (d) (2) (iii)



PARAGRAPH (d) (2) (iv)

(iv) Such well is drilled at least 990 feet in the case of an oil field or 3960 feet in the case of a gas field from any well "spudded" in such field subsequent to December 23, 1941; and

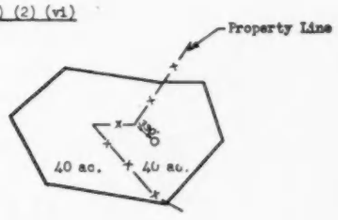
Paragraph (d) (2) (iv)



PARAGRAPH (d) (2) (v)

(v) Such well is drilled at least 660 feet in the case of an oil field or at least 2640 feet in the case of a gas field from any well "spudded" or completed in such field on or before December 23, 1941; and

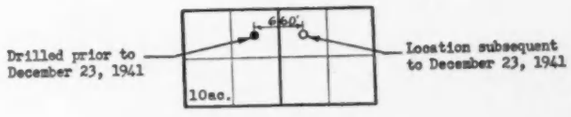
Paragraph (d) (2) (vi)



PARAGRAPH (d) (2) (vi)

(vi) Such well is drilled at least 330 feet in the case of an oil field or 1320 feet in the case of a gas field from any lease line, property line or subdivision line which separates unconsolidated property interests.

Paragraph (d) (2) (v)



This Amendment shall take effect immediately. Issued this 18th day of February, 1942.

(signed) J. S. KNOWLSON,
Director of Industry Operations.

Multiple-Zone Completions

By E. O. BENNETT,* Continental Oil Company

THERE are many oil fields throughout these United States that have two or more separate and distinct hydrocarbon, fluid-bearing strata in overlying positions.

For the application of best production practice and maximum ultimate recovery from such overlying formations in any pool, each should be treated the same as if it were a single-zone field or pool. By this is meant that an operator or producer should be able to control the production rates of fluids from each zone entirely independent of all others below or above it, and that he should at any time be able to obtain formation pressures and bottom-hole samples from each zone for analysis.

Multiple-zone completions may be made with more than two zones producing simultaneously into the same well. In this discussion only two such formations have been considered, and the equipment discussed has been designed for and limited to dual completions.

The same principles and practices developed for dual completions may be applied to triple-zone completions.

The production practice of opening several separate producing sands into a single well bore has, no doubt, caused great underground waste and left much oil irrecoverable. Where two or more sands having pressures nearly alike, produce simultaneously into the same well without separation, the more permeable section will produce at the greater rate. If such a sand produces water, it is obvious that it may partially or wholly drown out the well and leave much of the oil from the sand of low permeability irrecoverable, as water will move through the sand of high permeability under less pressure differential than oil through a sand of low permeability.

Too much stress has been placed on the use of potentials for the de-

* This paper was presented before the Southwestern District, American Petroleum Institute Division of Production, at Dallas, February 27-28, 1942.

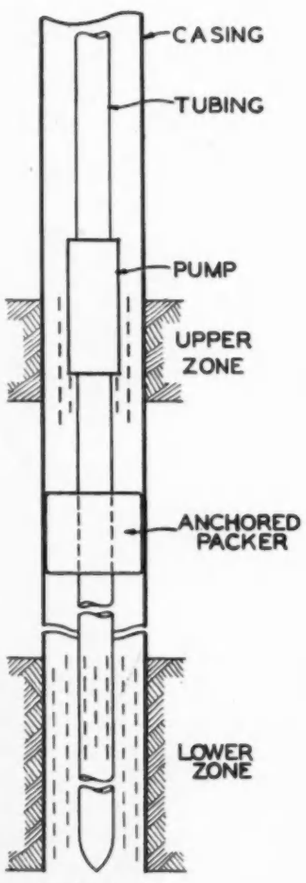


FIGURE 1

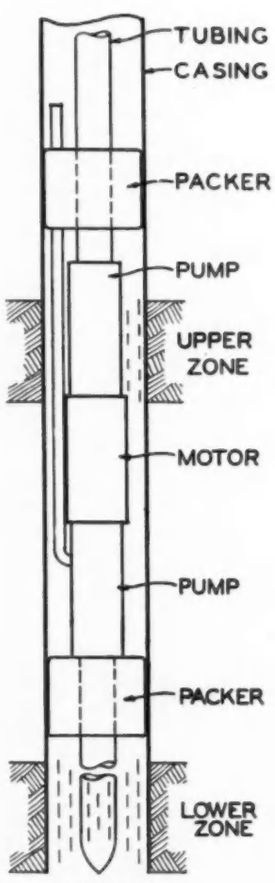


FIGURE 2

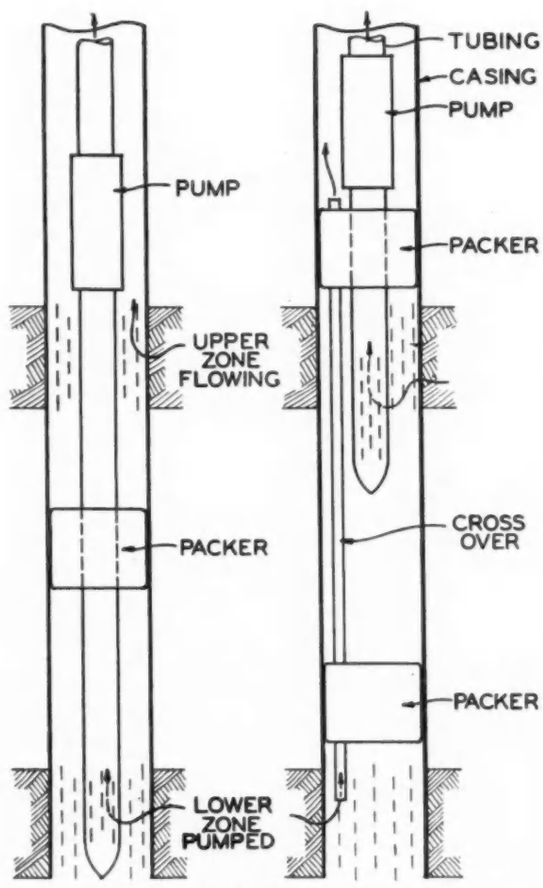


FIGURE 3

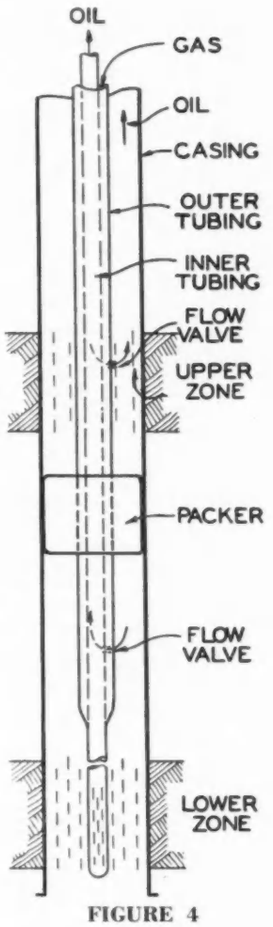


FIGURE 4

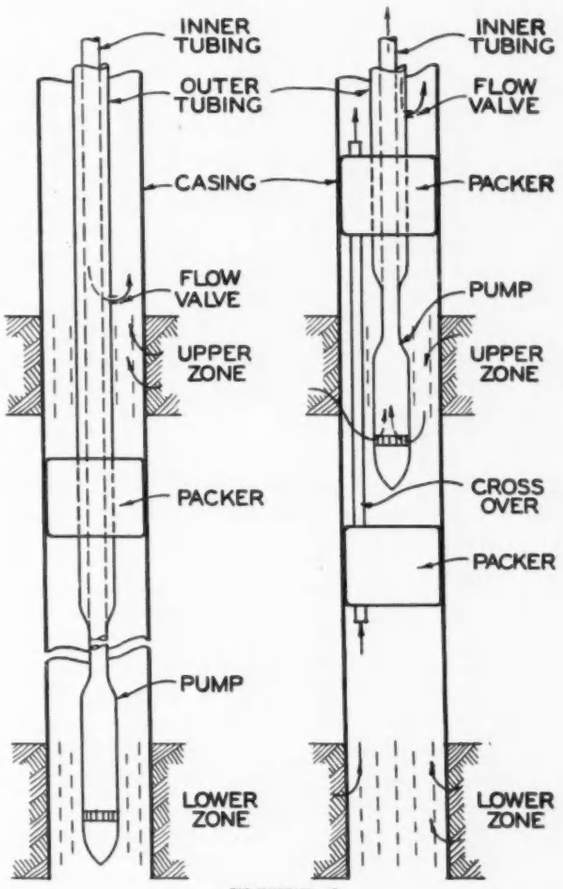


FIGURE 5

termination of allowables. This practice has caused a grave misuse of the application of multiple-zone completions when carried out by those who believe in "getting, while getting is good." In some cases multiple-zone completions were used for obtaining the greatest possible simultaneous yield from the several sands under a surface location, after which the allowable based on such total potential was taken from the most prolific producing zone. The effect of this is improper drainage of an offset operator, with a well in the same zone, who may be operating in keeping with good production practice, while trying to obtain the maximum ultimate recovery from his property; or it may cause premature encroachment of water or gas or both.

There is an optimum rate of production from any zone which will yield the maximum ultimate recovery. Such a rate is the one which will produce a barrel of oil at the surface with the least expenditure of reservoir energy. The principal factors governing the optimum rate of production are the permeability of the sand and the viscosity of the oil and control of pressure differential. The permeability is relatively fixed, while the viscosity may vary greatly with the pressure and amount of gas in solution in the oil.

The gas in solution is a partially controllable factor. Production not exceeding the optimum rate will greatly assist in controlling total produced gas and formation pressures. The general principles of good production practice are well known and understood.

While there have been some misuses of multiple-zone completions, in areas where state conservation rules and regulations are lax and unsuited for adequate protection to producing properties, the use of this advanced technique in production should not for this reason be condemned. On the contrary, it has proved most advantageous and economical in many areas and will be used to effect large savings in many others.

Dual completions in multiple-zoned fields will reduce steel tonnage by approximately 50 percent over the amount required for the drilling of separate wells to any two overlying formations. Under present war emergency conditions, where spacing allocations have been imposed upon the oil industry for the purpose of conserving steel needed for military and naval use, dual completions will greatly assist in keeping up the current or increased rate of production with a minimum amount of new pipe. For this reason alone, this method should be used wherever suitable conditions exist; and conservation commissions not now permitting such completions should and are urged to do so in the interest of national defense.

Pumping of Multiple-Zone Wells

Many people have considered multiple-zone completions suitable only for the flowing life of all the

zones being produced. No reason for such assumption is seen, as the pumping of a dually completed well is simply a mechanical problem which can be readily carried out with proper equipment and management.

Dual pumping wells may be placed in several classifications, as follows:

1. A single pump and packer installation where the formations above and below the packer are pumped intermittently by the same pump.
2. A double pump with single or double prime mover where two zones are pumped simultaneously.
3. A single pump in one of two zones with natural flow from the other.
4. The gas lifting of two zones simultaneously.
5. The gas lifting of either of two zones while pumping the other.
6. The pumping of one zone while injecting gas into the second.
7. The gas lifting of one zone while injecting gas into the other.

The installation under 1 above consists of an ordinary rod actuated pump with a perforated, flush-joint tail pipe below the pump. The perforations in the tail pipe may be placed above or below a double seal, non-retrievable production packer, by raising or lowering the rods and tubing. The raising or lowering of the tubing may be done with a hydraulic lift, a mechanical jack or by wire line if a derrick is over the well.

With this arrangement, the allowable production for a specified period is obtained from one zone. After this time the pump assembly is raised or lowered so that the pump intake is in the second zone. The cycle is repeated as often as necessary to produce the well's assigned allowable. The allowable of such a dual well is the sum of the allowable of each sand or formation. Oil from each zone is kept separate.

The packer may be equipped with suitable backflow valves to prevent flow between formations when the tubing is out of the well. The packer can only be removed by being drilled up. Figure 1 shows a diagrammatic hook-up of this method of pumping. Dual pumping of this type has been successfully conducted in Kansas.

Hydraulically or electrically actuated, deep-well pumps may be satisfactorily operated in the same manner. With rod-actuated pumps, short joints of tubing and rods may have to be added or removed according to the well head connections used.

Where allowables are small, as they now are in most fields, this type of multiple-zone pumping is most economical and the labor for making changes, from one zone to the other are few, and inexpensive. Due to elasticity of the tubing, there is some motion through the fixed packer. This motion has not been found detrimental; and since the packer is at all times lubricated with oil, it remains tight. Figure 11 shows the type of production packer used for this method of pumping. This motion does not occur with the electric or hydraulic pump.

In the second case above mentioned, a double pump actuated by one prime mover may be used. One pump will have its intake below a packer and will pump

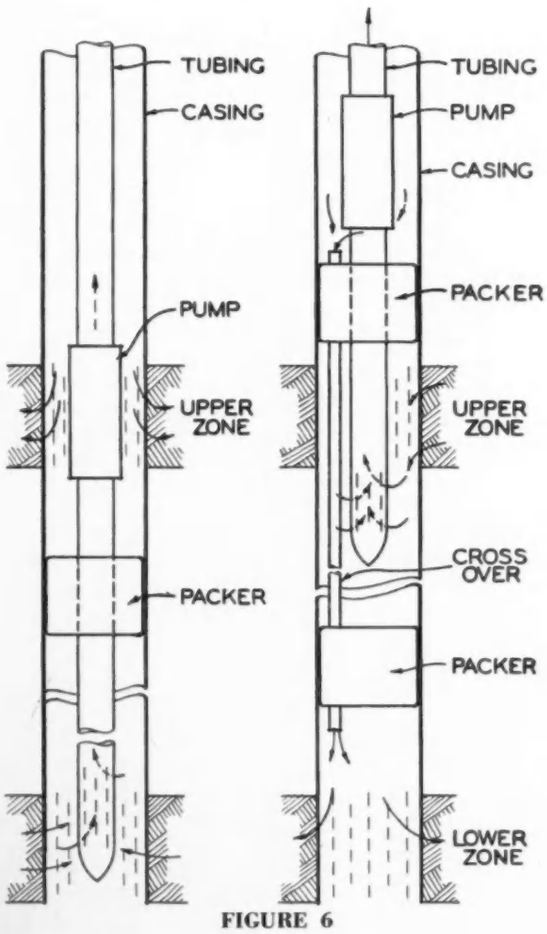


FIGURE 6

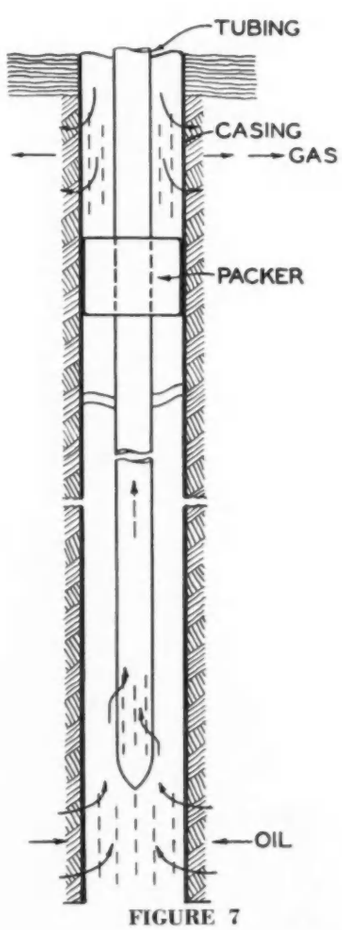


FIGURE 7

through a cross-over packer above the first packer to the annular space. The second pump will have its intake between the two packers and will pump up through the tubing. The two streams of oil will be conducted out of the well separately. This type pump may be rod actuated, hydraulic or electrically driven. This arrangement is shown in Figure 2.

In the third case a single type pump may be used to lift oil from one zone, while oil from the other flows. If the lower zone is to be pumped, a single packer may be used with the pump on the tubing and the suction or pump intake extending through the packer. Where the upper zone is to be pumped while the lower flows, a double packer may be used with the upper zone being pumped from between the two packers and out the tubing. The lower zone will flow through a cross-over to the annular space above the top packer. The general arrangement is shown in Figure 3.

The gas lifting of two zones simultaneously may be done with a double string of tubing and a single packer. Gas is injected between the two strings of tubing. Orifices or flow valves are used to flow gas into the annular space between the outside string of tubing and the annular space between it and the casing, also to permit gas to flow into the inside string of tubing. This arrangement is shown in the sketch of Figure 4.

The pumping of an upper zone while gas lifting the lower zone may be accomplished with a double string of tubing and a cross-over packer arrangement. The pump is connected to the inside string of tubing and is located between the two packers forming the cross-over.

The pumping of the lower zone and gas lifting the upper zone may be carried out with a double string of tubing and a single packer. The pump is supported on the inside string of tubing, the gas is injected between the strings, while the oil from the upper zone flows between the outer tubing and the casing. See Figure 5.

The pumping of the lower zone while injecting gas into the upper zone may be done with a single string of tubing and packer, as shown in Figure 6. The reverse may be done with a single string of tubing and a double cross-over packer.

The gas lifting of oil from a lower zone while injecting gas, in a pressure maintenance project, to the upper zone may be carried out with a single packer and single string of tubing. The gas is injected into the annular space between the tubing and casing above the packer where it flows into the upper zone. Gas for lifting the oil is taken from the annular space through a flow valve or series of such flow valves.

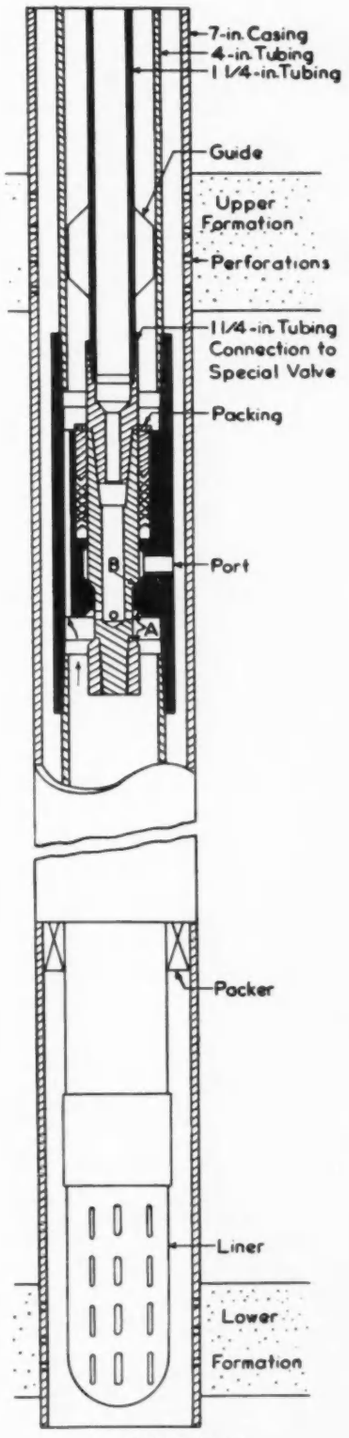


FIGURE 8

For the gas lifting of the upper zone and gas injection to the lower zone, a single string of tubing with a cross-over packer arrangement is required.

Dual completion principles may be applied to a single-zone formation for the simultaneous return of gas, for pressure maintenance to the top of a thick sand, while producing oil by pumping, flowing or gas lift from the lower section of such a sand. This is accomplished by the method shown in the sketch of Figure 7. The casing is perforated at the top of the sand or at the gas-oil contact plane. The casing is also perforated at the bottom of the oil zone. A packer between the tubing and the casing is set between the two sets of perforations at any convenient location. The tubing extends through the packer to the lower zone and oil is produced through it. Gas is pumped down the annular space and into the upper section. Since the lateral permeability is generally greater than that in a vertical direction, the gas will spread along the ceiling of the producing section instead of by-passing to go down and out through the lower perforations. It is, however, necessary to control flow rates, so that at no time is the liquid seal over the lower perforations broken to permit gas to blow through. This method of returning gas has been satisfactorily used in thick sections and permits every well in a pool under pressure maintenance to be used as an input well if required. This permits the widest distribution of gas with the least number of wells.

Another interesting development in connection with multiple-zone operations is an unloading valve developed by J. O. Lewis. The valve is used primarily for removal of condensate formed in the casing or tubing of a dually-completed well where a reduction in pressure causes the liquid formed by retrograde condensation to load up and stop gas flowing from single-phase zones. Figure 8 shows the general arrangement of this valve.

"A cross-sectional view of this valve* and installation in the tubing string is shown in Figure 8. The valve, exclusive of the 1¼-inch tubing, is made up in the 4-inch tubing string used in wells in the field, and is placed between the upper producing formation and the packer separating the zone

producing through the tubing from the zone producing through the casing. It is designed with passages through the valve joint around the valve mechanism to permit flow from the lower formation at all times through the annulus between the 4-inch and 1¼-inch tubing (indicated by small arrows just below valve assembly). After the tubing string is set in place on the bottom of the hole and the packer set, the 1¼-inch tubing is run with a guide to, and made-up in, the Lewis valve. As the surface end of the 1¼-inch tubing is made-up with a hollow piston rod, it is necessary to allow for stretch and temperature expansion before the tubing is cut and the connection made.

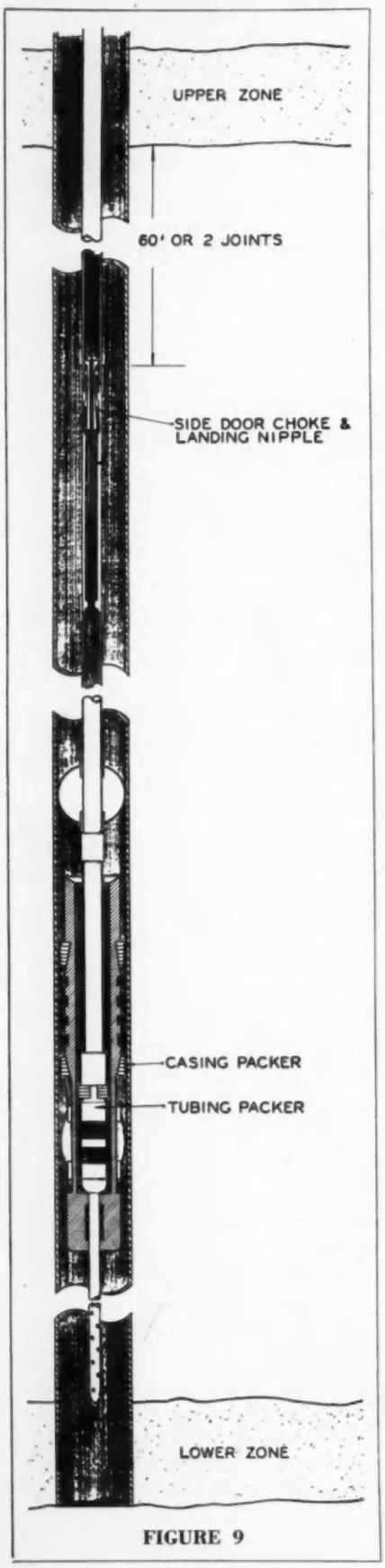


FIGURE 9

"Operation of the valve is relatively simple as its purpose is to unload the condensate collected in the casing annulus. Figure 8 shows the valve producing through the tubing to remove any condensate collected there, though usually the velocity of the gas is sufficient to keep the liquid moving through the smaller diameter of the tubing.

"The valve can be made by means of a timing device, to produce from either formation the necessary time to remove the condensate. This timing device controls a motor valve that allows gas from the casing to flow through a regulator to the top of a reservoir of oil. A connection from the bottom of the oil reservoir allows the gas pressure to force the oil into the bottom of a cylinder on top of the Christmas tree. The pressure of the oil forces the piston in the cylinder to raise the 1¼-inch tubing, thus operating the valve at the other end. At the end of the desired time the timing device operates the motor valve to shut off the gas supply and the pressure on top of the oil is allowed to bleed-off through a small orifice in the top of the reservoir. With the pressure released below the piston in the cylinder above the Christmas tree, the weight of the small tubing causes it to move downward of its own accord, close the port to the casing annulus, and produce from the tubing.

"In figure 8, A indicates the lower valve seats, which are open in the figure. B indicates the closed seats of the upper valve that allow the condensate in the casing to enter through the port opposite the valve and enter the 1¼-inch tubing. The small circle below B indicates the entrance to the small tubing."

* From an article by W. R. Brown "Flexibility and Efficiency of Two-Zone Completions Proved in Condensate Field." The Petroleum Engineer, February, 1942.

The above is an outline of but a few of the various pumping applications which may be made in dually completed wells operating under widely different conditions.

Method of Making Dual Completions

One of the preliminary requirements of a multiple-zone completion is to make sure there is an absolute seal betwen the two producing zones outside of the casing.

If the two zones that are to produce are not too far apart, the original casing cement job will, in all probability, effect a proper seal between the producing formations. To insure a good cement job, the use of pipe-centering devices and well scratchers is recommended. Both of these devices act to center the pipe in the hole while the wall scratchers serve additionally to break down and remove surplus filter cake, thereby providing better conditions for the bonding of the cement to the surface of the hole.

Unless the well has been drilled in firm consolidated formation that will not cave or wash out, the use of well calipers is recommended for determining the volume of cement necessary to fill the hole to a predetermined level. The volume shown by caliper surveys indicates that the diameter of a hole is often more than twice as great as that drilled by the same bit in harder formations.

In deep, high-pressure wells, heavy mud is sometimes necessary. Often the mud weighs more than the normal cement and there is a definite tendency for the cement to channel up through the mud, leaving the cement in an unsatisfactory condition at the casing shoe. A heavy cement has just been developed which can be made with densities in excess of 28 pounds per gallon, and yet remain readily pumpable.

If an old well is to be used for a dual completion and the sands are quite far apart, a squeeze cement job should be made through a new set of perforations below the perforations into the upper sand.

The distance between the two producing zones included in a dually completed well need not be great. Any distance which is sufficient to effect a cement seal outside the pipe is generally suitable for the making of dual completions. The distance needs to be only enough to provide for the packer seals between the perforations.

Figure 9 shows the general arrangement of the equipment used

This Smoke Signal Spells W-A-S-T-E

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for making dual completions between two separated zones in the Ville Platte field, Louisiana.

The first step is the obtaining of a satisfactory casing cement job as above described. The casing is then perforated opposite each of the producing zones with as many holes as necessary.

After perforating the casing the packer, which is of the non-retrievable type, made of drillable material is set in a blank section of the casing, between the producing zones. The packer is run on drill pipe and is connected to it with a left-hand thread. Drill pipe is used in order that sufficient expansion pressure may be placed on the packing rings of the packer, when anchoring it in place by setting the two sets of slips, one against downward motion, the other against upward motion. After the packer has been securely anchored, the drill pipe is disconnected from it by backing-off at the left-hand-threaded joint and removed from the well.

The tubing string with a "bullet" packer assembly and side-door choke immediately above the "bullet" packer is next run in the well. The "bullet" packer is set inside the shell of the casing packer by putting weight on it after it is seated. The same load that expands the packing against the shell of the casing packer by shearing pins also sets the hold-down slips of the "bullet" packer in the main casing packer, so that it cannot be removed. After the slips have been set, a strain is taken on the tubing to keep it straight so that instruments may be run through it whenever desired. The tubing may be backed off the "bullet" packer at a left-hand joint immediately above the packer assembly.

The next step is the washing in of the well through the side-door choke assembly on the tubing.

After the washing in has been completed by circulation of either gas or water, a blank bean is run to close the choke and the well is put on production. After circulating to start production through the annular space, it is sometimes necessary to swab through the tubing to unload the lower zone. The side-door choke arrangement is shown in Figure 10. Ordinarily the bottom valve is left out of the choke assembly, but it may be used when desired or necessary and retrieved before closing the side-door opening.

The body of the main casing packer is made sufficiently long to take four or five bullet packers. It may be necessary to remove the tubing from the well at some time. With this arrangement the tubing may be removed and reset with a new bullet packer four or five times which should, under normal circumstances, last the life of the well. If more cycles of the operation are required, it then becomes necessary to drill up the main packer assembly and replace it with a new one.

There are numerous ways of handling packers other than the method above described, which may work with equal satisfaction. The method described was developed to provide a non-leakable non-retrievable seal between the two producing zones that would be permanent and positive.

Tests for leakage between zones may be made at any time by analysis of the oil from the two separate zones, or by the injection of a mercaptan malodorant into one zone and analyzing the other zone production for it.

The use of dual completions should be granted to producers upon special application to the various conservation bodies throughout the oil-producing states, rather than by general approval. Permits should only be granted after an operator has satisfied such commissions that his wells and producing formations are suitable for such completion and that he will use proper equipment.

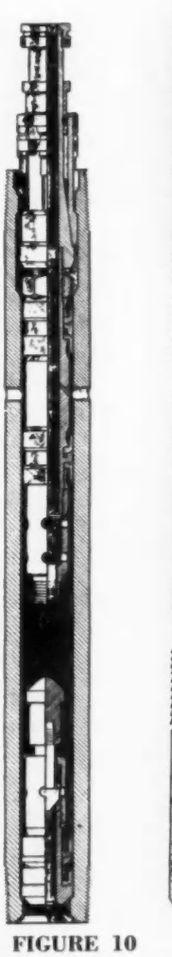


FIGURE 10

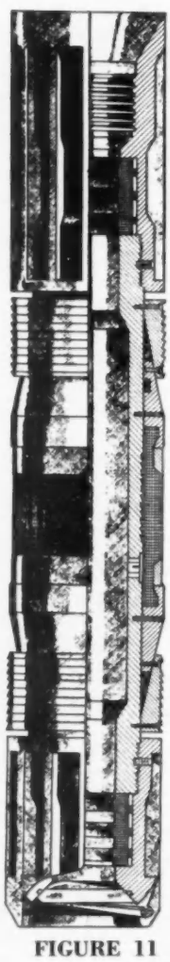


FIGURE 11

When producing a dually completed well, care should be used to see that rates of flow from an upper sand do not occur with velocity sufficient to cut the tubing by a jetting action of fluids through the upper zone perforations. The use of a synthetic-rubber sleeve over the tubing opposite such entrance ports will protect it from cutting out.

A summary of the advantages of multiple-zone completions, properly carried out by qualified operators is set out below:

1. Dual completions save approximately 50 percent of the steel required to drill two separate wells to the corresponding zones. During this war emergency this steel is needed.

2. Dual completions will, in certain strategic areas, permit the most oil to be recovered per ton of steel used and will help keep up allowable requirements so badly needed at this time.

3. Two-zone completions will permit the draining of thin sands which otherwise would not produce enough oil to justify the drilling of a well.

4. An edge well that would not be drilled in a single zone can often be completed in a two-zone area and produce large volumes of oil that would ordinarily be left irrecoverable.

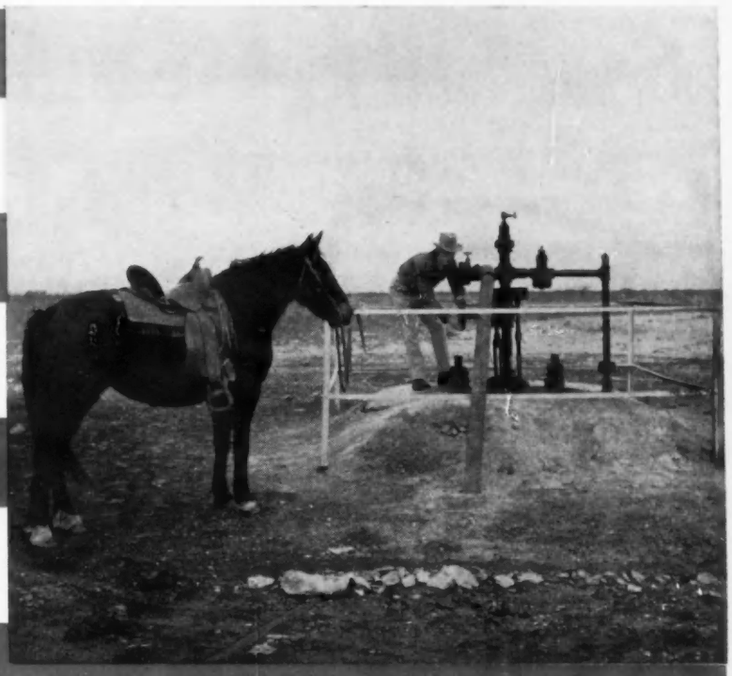
5. The drilling time and wear and tear on drilling equipment is reduced by approximately one half by the use of dual completions. This effects a corresponding saving in the completion costs of the wells drilled.

6. Multiple-zone completions greatly reduce the cost of marine drilling where several zones may be reached from a single derrick location.

7. The pumping of multiple-zoned completions has been successfully carried out and will permit such wells to be operated in separated sands long after the flowing stage has passed.

8. In a field where pressure maintenance is carried out, the use of multiple-zone completions provides a great many more locations for gas injection than would otherwise be available.

HOW OPERATORS USE INGENUITY TO SAVE TIRES



OIL companies currently are adopting new conservation plans—programs of travel coordination for company vehicles to save automobile use and thus reduce wear of tires.

Several companies have issued pamphlets and bulletins setting forth methods on how to achieve mileage conservation. These suggestions, besides calling for a general reduction in auto use, include a return to the use of horses, bicycles, trains, buses and other common carriers wherever possible.

In many oil fields, old dobbin has replaced the lease man's automobile as a mode of transportation. Pumpers for one West Texas operator, who formerly used their own cars on a mileage basis, are making their rounds on horses. The plan was initiated the last week of January with the purchase of the first horse. So far eight horses have been bought for four leases, and more are to be purchased.

The average price for a horse, equipped with saddle and bridle, ranges from $125 to $150. This particular company is loaning its pumpers the money to purchase the horse, and will pay a monthly allowance based on the average mileage covered on that lease during 1941. With this monthly allowance, the pumper is expected to repay the loan and provide feed and shelter for the horse.

To overcome the problem of transporting lubricating oil and grease, sample cans and other supplies needed by the pumper, companies are building small sheds at each tank battery where such equipment may be kept permanently.

In some instances where economically feasible, lease houses are being moved closer to the field. These moves are being made in many areas where the smooth terrain makes the house movement less difficult. Other operators are reported building houses for employes on or near the leases, thus cutting out many miles of daily travel to and from work.

One company issued a booklet, entitled "Our Automobile Conservation Policy." The main regulations include:

Restricting maximum speed to 50 miles per hour.

Reducing the number of vehicles in service by eliminating unnecessary trips, employes traveling together whenever possible, and use of public transportation facilities.

Put new or slightly worn tires on the vehicle and use badly worn tires as spares.

A maintenance of air pressure 10 percent in excess of passenger car manufacturers' recommendations.

Check wheel alignment and brakes every 90 days or each 10,000 miles.

Rotation of tires on the wheels each 5000 miles.

Another company issued a bulletin asking that employes stop using company cars for personal use. Two other suggestions included: "gang up in one car instead of forming a caravan, and be sure there is reason for going."

A gas company has adopted a rigid coordinated travel program for its outside employes. When an employe plans to go out of town, and cannot reach his destination by common carriers, he gives advance notice to the telephone operator who in turn will pass the information on to any other employe who might call asking about future trips.

One company told its employes: "Plan ahead, and go by train where possible. Stagger your trips, and travel at moderated pace." A drilling contractor on the Texas Gulf Coast sent out information on how to care for drilling hose. Another sent out copies of "Ten Commandments to Save Tires" with pay checks.

Where the horse, train, bus or bicycle will suffice to get the job done, many automobiles are being used only for emergency travel—for the time being at least.

Swabless Method Speeds Up Routine Well Completions

By GILBERT M. WILSON, Staff Writer

BRINGING in 8,500 to 11,500-foot wells without the need for swabbing, and in an average total elapsed time of only 3 to 4 hours after the removal of the drilling mud to flowing of clean oil into the tanks, is fast becoming an accepted method of completing wells by several companies operating in the San Joaquin Valley area of California.

The completion method or technique is essentially one wherein live oil and gas from a nearby, already completed high-pressure well is turned into the new well. The oil and gas displaces and lightens the fluid column in the hole to such an extent that the well will kick over and begin flowing..

Final operations prior to completing the well are carried on in the usual manner. The liner is hung, tubing is run in, and the Christmas tree is set in place over the well. A line then is connected between the well tubing and the mud pumps.

Mud Displaced With Water, Oil

The pumps are started, pumping water down the tubing and forcing the drilling mud out through the casing outlet. This operation serves the dual purpose of relieving the formation of the heavier weight of the mud column, and at the same time salvaging the hole full of specially treated mud which can be used on the next well to be drilled. The hole is washed until the returns are clear water.

At this point, oil and gas, which previously had been piped over from a nearby high-pressure well, is run in with the water being pumped down the tubing. An initial proportion of ⅓ oil and ⅔ water generally has been found to yield the best results. If there is sufficient differential in pressure in the injection well, the oil is fed into the line downstream from the pumps forcing water into the tubing. Otherwise, it is mixed in with the water and forced on down the well together. Care must be exercised, however, in not putting in too much gas and oil at the start lest the pumps become gas locked.

As the proportion of oil to water is gradually increased, the pressure on the pumps also will increase. This fact need not be of concern to the operator, when it is realized that the bottom-hole pressure of the well at that time is for all practical purposes, a constant. Water alone, when it is being pumped down, requires less pressure to force down, as the water has a greater specific weight than oil. When the percentage of oil in the column is increased, the difference in weight must be made up by an increase in the pressure required to inject it into the hole against the bottom-hole pressure.

Should the pump pressure go up to the point of equalizing the flow pressure of the injection, the latter is shut off, and the slug of oil and water then in the tubing is pumped on down. It may be necessary to pump several such slugs down, as the gas-oil ratio of the injection oil is gradually increased, and the fluid in the casing becomes increasingly lighter.

Lightened Column Causes Well to Flow

This injection - pumping procedure is continued until sufficient oil and gas has been forced down the tubing to cause the well to begin flowing naturally by heads, as a result of decreasing or eliminating the differential over the natural formation pressure.

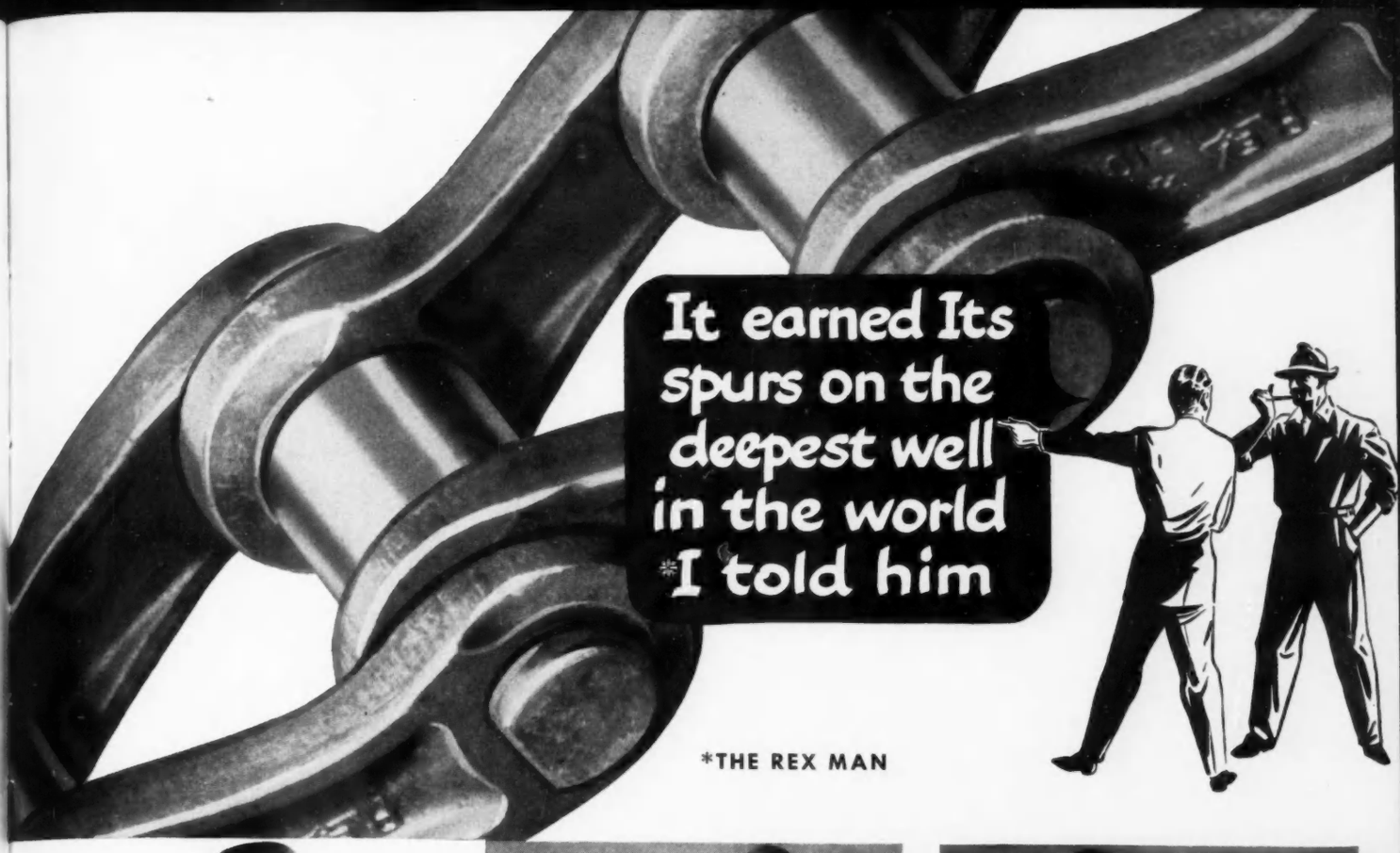
A man stationed at the end of the discharge line leading from the well usually is able to determine the exact time at which the pumps are to be shut down. More and longer heads of oil and gas will appear until finally the well is flowing naturally. The well may then flow until it cleans up, placed on steady production, or shut in.

The average total elapsed time, including the displacing of the mud in the hole with water seldom exceeds 3½ hours, depending upon depth of the hole and other factors. It is possible for some wells to clean up from 100 percent water to less than 5 percent in 10 minutes. This latter figure of course, in applying the method to wells in other fields, will be dependent upon several important factors. Among these are the depth of the well, original formation pressure, porosity and permeability of the sand itself, and certain extraneous factors, such as the pressure of the injection well, and the method of handling the pumps or other surface equipment.

Better results will be obtained in using the above method, if the wells are in the nature of routine completions in an area where the structure and bottom - hole pressure, or other conditions, are fairly well proven. Under these conditions, the size and performance of the new well may be more closely predicted, and the off-setting or nearby well, which has comparable conditions, may be used for the injection well.

Wells of the above mentioned depths in the San Joaquin Valley area usually are tubed to within 30 to 100 feet of bottom. A typical well is cased with 7- or 8-inch casing which is set at the top of the sand. A 4¾-inch or 5-inch perforated liner then is hung opposite the sand face. Its length may be anywhere from 100 to 300 feet, depending upon the sand thickness in the field being drilled.

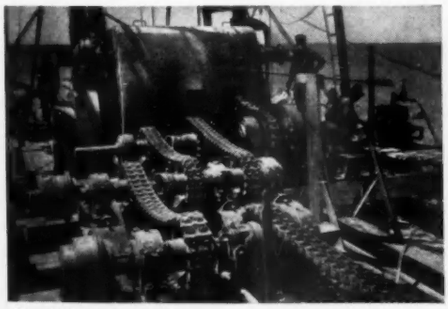
Casing pressures of new wells in these fields vary from 1500 to 3400 pounds, depending upon which



① "WELL, NOW," THIS DRILLER SAID TO ME, "that KCLA2—the deepest well in the world, must have been quite a drilling job. On the other hand, couldn't any good oil well chain have done as well on the same job?"

② "MAYBE THEY COULD," I answered. "But remember this: In field after field, where the drilling is deep and you find thousands of feet of stem in the hole, Rex Champion is the chain that's doing the job. Here's why:"

③"THE DESIGN IS THE THING! Look at these accurately forged sidebars—the unusually effective lubrication system. And look at that force-fit assembly that insures against destructive rockings."



④ "WHEN THE OIL lies close to the surface and other conditions are favorable, you can use Rex chains that are built for lighter service. Rex makes all types, but for tough drillings like yours, Champion's the choice."

⑤ "AND BEFORE I FORGET IT, let me remind you that aside from some outstanding chains, we've also got the finest self-priming pumps that ever worked around an oil well. Rex oil field pumps pump everything."

⑥ "SAY, I'VE BEEN LOOKING FOR a good pump—and this Rex pump seems to fill the ticket. Give me the prices, delivery dates—and you'll be hearing from me. I'll check into those Rex Champion chains, too."

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zone is open to the well, and the height of the fluid column standing in the casing.

Many Savings Realized

A number of time- and money-saving advantages have been realized by the adoption, wherever possible, of this method of completing the deep wells. The conventional swabbing method usually takes a minimum of from three to four hours alone, to swab the wells in. The cost of the swab, and particularly that of the swab rubbers used on each job is another costly item. In a well of this depth, the sand line suffers considerable wear during a swabbing operation, and must be replaced after a few such jobs. In many instances it also is necessary to take the drilling line off the drum and respool the sand line on it for just that job. The labor cost of time spent in rigging up, swabbing, and in the necessary clean-up work following the swabbing of the well is largely avoided. Also eliminated to a great degree is the fire hazard, which exists during swabbing operations, to both men and equipment. It also eliminates the possibility of losing a swab in the hole, necessitating a fishing or pulling job.

Further savings are effected when it is considered that it ordinarily takes anywhere from eight hours to three or four days for the well to clean up after it has been swabbed in on production. This contrasts favorably with the few hours required for the well to clean up in the newer method. Because of this, prolonged treating jobs and use of chemicals in with the fluid tanked during the cleaning-up interval, are largely eliminated.

Because the bringing-in and cleaning-up operations are completed together, and in such a comparatively short while, the crews and equipment may be moved off the well much sooner, and the follow-up production crews can then begin their final installation work and cleaning up preparatory to placing the well on steady production.

Prospecting Tactics in a Total War Economy

[*Continued from page 18*]

of that problem is left to the geochemical log of a "slim-hole," which, by its very nature, is less expensive than the usual production test so ill-fitted to serve that purpose. Then, should the petroleum accumulation exist at a depth beyond the reach of current drilling practice, the exploratory test establishes that fact at minimum expense. Finally, the prospect remains in the hand of the exploration department until such time as it is ready to be turned over to the production department for exploitation. This practice establishes and defines the responsibilities of the two departments, which, to date, have never been clear, to the detriment of both organizations.

Just as perfection never can be attained but only approached, just so the ever present hazard in prospecting cannot be eliminated but only reduced. This coordinated program of successive high grading will reduce materially the prospecting hazard, and also will achieve discovery in minimum time. And, with respect to the more orthodox program of structural prospecting, one can only point out that we are faced not with a shortage of structures but with a shortage of strategically located petroleum reserves. How much better off we would be if we now had adequate petroleum reserves established not only in Michigan, New York, Georgia and the Pacific Northwest, but also in Eastern Canada, England and Australia.

★ OIL IS AMMUNITION ★ ★ KEEP 'EM PRODUCING ★

REFERENCES

[1] Eleven salt domes in nine crew months.

[2] Elephant Pools. "Of the 22 largest pools in the United States, more than half of the oil production was obtained form pools in which the dominant trap-making element was a change from porosity to non-porosity. Not a single one of these pools of stratigraphic type would have been discovered by our present orthodox geological methods unless it happened that there was a local dome or anticline present within the area of the pool!

"In some ways it is like hunting in Africa with air rifles and pop guns and never realizing that there is big game in the country even after the natives repeatedly bring in lions and elephants. We have gone after our structures with increasing minuteness—in fact we even name them after such minor features as 'wrinkles,' 'noses,' and 'pimples'—and we have left the big-game hunting to the untrained hunter—the casual 'wildcatter.' Half of the 'elephant' pools of the country are of the stratigraphic type." A. I. Levorsen. "Stratigraphic Versus Structural Accumulation," Bull. A.A.P.G., Vol. 20, No. 5, May, 1936, pp. 521-530.

[3] "Farmer's Sand." The saturated oil sands which, as every farmer knows, underlies his land, and above which, a few feet too shallow, every dry wildcat is abandoned.

[4] In spite of that excellence, it appears that structural prospecting in the United States has passed its peak. Statistics presented by Wallace Pratt in the July, 1941, Mining and Metallurgy show that the dry hole per major discovery ratio has been increasing materially since 1937.

[5] Another complication is that there are many high relief structures known in the United States with crests barren of petroleum, but which have produced appreciable amounts of oil from flanking stratigraphic traps, to which latter the reflection seismograph is practically blind. Many of the piercement-type salt domes of the Gulf Coast are of this type.

[6] G. Laubmeyer. U. S. Patent No. 1,843,878, issued February 2, 1932.

[7] Germany, Russia, and parts of the United States.

[8] E. E. Rosaire and Leo Horvitz. U. S. Patent No. 2,192,525, issued March 5, 1940.

[9] The first confirmation by discovery credited to this technique was the discovery of commercial accumulation in a Prue sand pinchout in Oklahoma, in 1937.

[10] The same limitation obviously applies to structural prospecting as well.

[11] East Bernard, Wharton County, Texas. North Rosenberg, Fort Bend County, Texas.

[12] As to the magnitude of anomalies to be expected on a potentially important petroleum province, one should refer to the results in areas such as the Tulsa Basin and the Seminole Plateau in Oklahoma, where the number of tests drilled is so great that the petroleum producing potentialities are nearing complete evaluation. The production maps of such areas show a surprisingly large number of oil and gas fields of various sizes and shapes. Of the many fields now known in those areas, a few are of material extent, while the number of smaller fields increases rapidly as their areal extents decrease. Therefore, one should expect that a valid direct prospecting approach in likely but virgin territory would and should show a multitude of anomalies, few of which, percentage-wise, are of material extent, vastly outnumbered by anomalies of smaller areal extent.

[13] One case in point is aerial photograph. From the standpoint of geological mapping, that new technique found little to contribute to the earlier if slower and costlier contributions by the surface geologist with plane table and alidade. However, it is obvious that if aerial photography now can make important contributions to surface geology, those contributions should be made by aerial photography and not by surface mapping, even if equivalent work elsewhere was done by plane table and alidade.

Wells Drilling Off 40 Percent Since January 1

Drilling already has been curtailed practically as much as will be necessary to reach the objective currently contemplated by the Office of Petroleum Coordinator and the War Production Board, it is indicated by a survey of rigs in operation March 1.

On that date, only 2063 wells were actually drilling throughout the United States, following a steady relegation of drilling rigs into idleness, for lack of pipe and other materials, during January and February.

The 2063 wells drilling March 1 compared with 2659 on February 1 and 3453 (revised) on January 1.

Since the beginning of the year there has been, therefore, a 40-percent decrease in the number of rigs making hole, and a similar reduction in completions is to be expected when present drilling is reflected in the completion reports several weeks hence; although there had not yet occurred in February any material decline in completions.

The indicated 40-percent curtailment of completions, on the basis of present drilling, would constitute fulfillment of the lately revealed aims of OPC and WPB to cut well completions to about 19,000 in 1942 from the 32,000 of 1941, a 40 percent decrease.

The outstanding curtailment of development has been in Illinois, where only 71 wells were drilling March 1, against 298 on January 1; but activity has been sharply curtailed in practically every district of the country.

STATE OR DISTRICT	TOTAL RIGS IN OPERATION Drilling, Rigs Up, Shut Down: Year Ago, Mar. 1, 1941	Month Ago, Feb. 1, 1942	Now, Mar. 1, 1942	Percent Change From Year Ago	DETAILS OF MARCH 1, 1942 FIELD ACTIVITY: Rigs in Operation: Drilling	Rigs Up	Shut Down	Prelim. Activity: Derricks	Locations	Total Operations
Alabama	5	5	5	.....	1	.....	4	.....	.....	5
Arizona	7	.....	.....	.....	.....	.....	.....	.....	.....	.....
Arkansas	37	30	33	+ 10.1	23	2	8	20	3	56
California	255	248	218	— 14.5	123	50	45	.....	95	313
Colorado	32	20	22	— 31.2	1	.....	21	.....	1	23
Florida	2	1	2	.....	.....	.....	2	.....	.....	2
Georgia	3	.....	.....	.....	.....	.....	.....	.....	.....	.....
Illinois	308	215	140	— 54.5	71	18	51	34	.....	174
Indiana	76	56	46	— 39.4	33	3	10	.....	26	72
Iowa	3	1	1	— 66.6	.....	.....	1	.....	.....	1
Kansas	246	201	125	— 49.1	111	4	10	22	31	178
Kentucky	25	29	18	— 28.0	11	.....	7	.....	1	19
Louisiana	212	178	159	— 25.0	130	10	19	25	74	258
North Louisiana	74	55	44	— 40.5	27	5	12	20	2	66
South Louisiana	138	123	115	— 16.6	103	5	7	5	72	192
Michigan	147	175	130	— 11.5	64	17	49	36	67	233
Mississippi	35	23	18	— 48.5	9	1	8	2	2	22
Missouri	14	6	5	— 64.2	.....	.....	5	.....	.....	5
Montana	66	63	54	— 18.1	17	5	32	.....	7	61
Nebraska	28	25	24	— 14.2	6	3	15	.....	1	25
New Mexico	99	119	123	+ 24.2	74	4	45	.....	8	131
New York	35	125	125	+ 257.1	82	20	23	8	19	152
Ohio	271	276	154	— 43.1	73	10	71	6	16	176
Oklahoma	331	324	246	— 25.6	190	17	39	21	49	316
Oregon	2	.....	.....	.....	.....	.....	.....	.....	.....	.....
Pennsylvania	330	300	289	— 12.4	208	30	51	19	52	360
South Dakota	.....	2	2	.....	1	.....	1	.....	.....	2
Tennessee	11	5	5	— 54.5	3	.....	2	.....	1	6
Texas	1,144	1,039	884	— 22.7	676	36	172	23	559	1,466
East Texas Border Co.'s	16	12	10	— 37.5	6	1	3	.....	.....	10
East Texas Field	28	3	.....	.....	.....	.....	.....	.....	.....	.....
Rest of Eastern Texas	51	64	45	— 11.7	31	2	12	3	7	55
North Texas	195	139	97	— 50.3	61	5	31	2	96	195
West Central Texas	90	66	59	— 34.4	34	3	22	1	17	77
West Texas	296	352	300	+ 1.4	248	8	44	2	244	546
Texas Panhandle	87	99	57	— 34.4	44	4	9	2	12	71
Gulf Coast, Upper	77	100	91	+ 18.1	84	3	4	5	58	154
Gulf Coast, Lower	176	121	130	— 26.1	111	4	15	4	62	196
Southwest Texas	76	42	48	— 36.8	33	3	12	2	41	91
South Central Texas	52	41	47	— 9.6	24	3	20	2	22	71
Utah	4	4	5	+ 25.0	2	.....	3	.....	.....	5
West Virginia	165	296	186	+ 12.7	135	18	33	12	32	230
Wyoming	59	50	48	— 18.6	19	2	27	1	2	51
Total United States	3,952	3,816	3,067	— 22.4	2,063	250	754	229	1,046	4,342

STATE OR DISTRICT	MONTHLY COMPLETIONS: Total: Year Ago, Feb., 1941[2]	Month Ago, Jan., 1942[3]	Latest Data (Feb., 1942)[1]	Details for February, 1942: New Wells Drilled for Oil or Gas: Oil	Gas	Dry	Others	Old Wells Drilled Deeper	Total Footage Drilled	CUMULATIVE COMPLETIONS: FIRST 2 MONTHS: Total: 1941[4]	1942[5]	Percent Change in Weekly Average	Details for 2 Months of 1942: New Wells Drilled for Oil or Gas: Oil	Gas	Dry	Others	Old Wells Drilled Deeper	Total Footage Drilled
Alabama	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	2	.....	.....	654
Arkansas	8	8	10	6	.....	3	1	.....	65,222	22	18	— 18.1	12	.....	5	1	.....	116,858
California	88	86	69	52	3	10	.....	4	381,122	198	155	— 21.7	130	7	14	.....	4	863,115
Colorado	.....	.....	2	.....	.....	2	.....	.....	10,813	.....	2	.....	.....	.....	2	.....	.....	10,813
Georgia	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	1	.....	.....	1,507
Illinois	195	271	204	131	1	55	6	11	523,654	434	475	+ 9.4	313	2	137	6	17	1,245,179
Indiana	35	20	46	21	3	20	.....	2	74,237	70	66	— 5.7	33	6	25	.....	2	105,707
Kansas	138	180	133	82	5	38	1	7	392,367	277	313	+ 13.0	188	17	90	2	16	906,316
Kentucky	28	11	22	12	.....	10	.....	.....	27,713	47	33	— 3.0	17	.....	16	.....	.....	41,072
Louisiana	111	94	88	47	5	36	.....	.....	524,425	210	182	— 12.8	110	6	66	.....	.....	1,091,738
North Louisiana	48	36	42	23	3	16	.....	.....	135,954	86	78	— 9.3	42	4	32	.....	.....	248,055
South Louisiana	63	58	46	24	2	20	.....	.....	388,471	124	104	— 16.1	68	2	34	.....	.....	843,683
Michigan	61	64	63	37	6	20	.....	.....	160,497	115	127	+ 10.4	76	14	37	.....	.....	311,765
Mississippi	11	20	10	6	.....	4	.....	.....	49,081	22	30	+ 36.3	17	.....	13	.....	.....	153,212
Missouri[6]	6	2	4	.....	.....	4	.....	.....	1,941	11	6	— 45.4	.....	1	5	.....	.....	3,625
Montana	18	17	11	9	1	1	.....	.....	23,168	26	28	+ 7.6	18	7	3	.....	.....	66,096
Nebraska	6	7	1	.....	.....	1	.....	.....	2,606	18	8	— 55.6	4	.....	4	.....	.....	21,690
New Mexico	30	31	28	18	.....	9	.....	1	75,723	51	59	+ 15.6	40	.....	18	.....	1	157,026
New York	52	99	114	62	2	.....	50	.....	140,753	95	213	+ 124.2	121	2	.....	90	.....	261,083
Ohio	115	105	144	33	70	39	1	1	371,312	220	249	+ 13.2	57	107	76	2	7	587,209
Oklahoma	109	180	141	70	16	47	.....	8	418,278	272	321	+ 18.0	163	28	104	.....	26	953,370
Pennsylvania[7]	266	282	307	141	24	4	136	2	505,246	511	589	+ 15.2	283	51	9	241	5	969,436
Tennessee[8]	2	1	1	.....	1	.....	.....	.....	976	3	2	— 33.3	.....	1	1	.....	.....	1,776
Texas	689	716	646	425	15	175	13	18	2,541,458	1,282	1,362	+ 6.2	940	36	327	22	37	5,189,033
E. Tex. Border Co.'s	1	1	1	.....	.....	1	.....	.....	2,547	1	2	+ 100.0	.....	1	1	.....	.....	7,497
East Texas Field	63	8	3	1	.....	2	.....	.....	10,616	114	11	— 90.4	8	.....	2	1	.....	35,924
Rest of Eastern Texas	30	46	51	30	.....	16	5	.....	245,203	52	97	+ 86.5	62	2	28	5	.....	466,431
North Texas	164	143	122	64	1	48	1	8	251,536	288	265	— 8.0	149	1	96	3	16	558,316
West Central Texas	52	32	50	19	4	25	.....	2	116,172	88	82	— 6.8	36	4	38	.....	4	170,990
West Texas	128	200	169	143	.....	20	.....	6	718,498	247	369	+ 49.3	311	3	42	.....	13	1,513,433
Texas Panhandle	42	66	64	55	7	.....	.....	2	189,707	74	130	+ 75.6	106	18	4	.....	2	388,762
Gulf Coast, Upper	45	61	47	30	.....	16	1	.....	313,266	99	108	+ 9.1	74	2	29	3	.....	642,886
Gulf Coast, Lower	83	93	90	61	1	23	5	.....	544,418	165	183	+ 10.9	132	2	39	8	2	1,072,768
Southwest Texas	58	52	39	18	1	19	1	.....	133,056	107	91	— 14.9	51	2	36	2	.....	299,464
South Central Texas	23	14	10	4	1	5	.....	.....	16,439	47	24	— 48.9	11	1	12	.....	.....	32,562
West Virginia	55	54	72	9	47	10	.....	6	218,859	115	126	+ 41.7	21	74	17	.....	14	330,328
Wyoming	10	7	4	3	.....	1	.....	.....	18,996	14	11	— 21.4	9	.....	2	.....	.....	44,130
Total United States	2,033	2,258	2,120	1,164	199	489	208	60	6,528,447	4,013	4,378	+ 9.1	2,552	359	974	364	129	13,432,738

[1] Wells completed in 4 weeks, or 28 days, ended February 28, 1942. [2] Wells completed in 4 weeks, or 28 days, ended February 22, 1941. [3] Wells completed in 4 weeks, or 28 days, ended January 24, 1942. [4] Wells completed in 8 weeks, or 56 days, ended February 22, 1941. [5] Wells completed in 8 weeks, or 56 days, ended February 21, 1942. [6] Figures from Missouri Geological Survey. [7] Bradford and Kane-Clarendon, Pennsylvania, figures from The Producers Monthly. [8] Figures from Tennessee Division of Geology.

PIWC

[*Continued from page 12*]

that this country vitally needs a technique of management that will direct our industrial resources to a single objective, with the maximum efficiency and the minimum expenditures of time," the committee declared.

"The petroleum industry has cooperated fully with all government requests and has already accomplished remarkable results in meeting all demands to date, but in view of the tremendous dislocations in supplies of materials and transportation facilities and demands for products which are facing us, the industry must take more initiative and be prepared for greater sacrifices in order to adapt its operations fully to war requirements."

The major problem, the report maintained, is to develop methods of saving materials, man-power and transportation by avoiding such things as unnecessary construction or unessential cross-hauling and other duplication, but at the same time preserving the advantages of the individual initiative of thousands of organizations.

Pledging the industry "to subordinate everything to its war obligations," the committee set the standard of war time economy as "not dollars but materials, manpower, transportation and time."

"The application of these standards means that existing equipment of the industry must be utilized to the fullest extent," it explained. "New facilities should be constructed only as a last resort. Additions to marketing facilities can be countenanced only where directly necessary to the war effort. Refinery installations should be permitted only if possible combinations of existing facilities are inadequate or unduly inefficient. The production branch of the industry must undertake to devise equitable methods which will permit sharp curtailment of its use of steel.

"The guiding principle of wartime economics may be very tersely expressed. This principle is that existing facilities should be so utilized as to meet essential needs with the greatest efficiency in terms of physical standards; man-power, materials, transportation and time. As corollaries to the general principle of maximum utilization of existing facilities, there are three aspects deserving particular mention, as follows:

"1. Construction of new facilities so far as possible should be deferred until the post-war period, and where such construction is necessary it should be so located and planned as to minimize the use of materials that are scarce.

"2. Where supplies are short, non-essential demands should be modified, shifted, or curtailed.

"3. Where transportation is the bottleneck, available facilities must be used in a way to give maximum efficiency."

The impact of such a program on the industry naturally will not fall equally on all interests concerned, it was admitted, and consideration should be given to ways and means of sharing any burdens imposed, so that the relative situation of competitors is not unduly disturbed by the cooperative programs which are necessary in the interests of efficiency. Pooling of stocks or facilities and equitable sharing of added costs were cited as examples of ways in which this can be done.

With respect to prices, the committee held that "the economic necessity for emergency price regulation by the government in order to avoid inflation should be recognized and accepted, but at the same time ingenuity should be exercised to devise non-inflationary incentives where necessary." But, it warned, "methods must also be devised to keep the components of the petroleum price structure flexible to meet promptly the changing needs for products at different times and in different regions, without disturbing the general price level."

At the same time, the committee held that if the recommendations to secure efficient coordination of industry activities to meet war needs are to be effective, "some more definite and positive relaxation of the anti-trust laws appears necessary.

"The present practice of obtaining clearance letters from the Attorney General," it said, "appears both cumbersome and inadequate to facilitate what needs to be done to meet war needs."

"The importance of visualizing the full scope of the war and the part that the petroleum industry must play therein cannot be overemphasized," Wilson declared. "If the proper course of action is followed then the industry may emerge from this crisis economically stronger, better balanced and better equipped to meet post-war obligations. On the other hand, the principles of pre-war economics must not be permitted to guide its conduct under conditions where they are no longer appropriate, even if such programs are accorded government acquiescence for the time being."

☆ OPA ☆

Higher Prices Asked For East Coast

An immediate increase in East Coast prices for all products was asked of the Price Administration this week by the industry war council, following a lengthy discussion of the transportation system.

The appeal was made at a meeting of the council at which Price Administrator Leon Henderson was present, and the East Coast committees continued in session through the week, after the council meeting adjourned, in consultations designed to develop the exact amount of increase necessary to offset higher transportation costs.

Disclosing that he was giving his full support to the industry's petition, Coordinator Ickes on March 5 said that he felt that Henderson "realizes that if costs go up prices must be permitted to go up too."

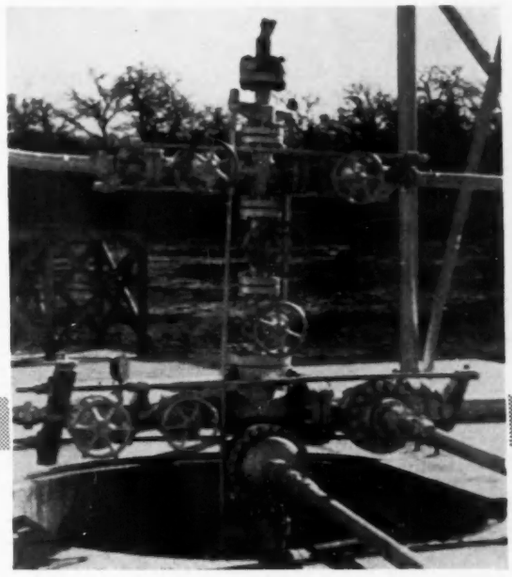
Ickes said no definite figure had been decided upon at that time, but indicated that reports that it was to be four-fifths of a cent per gallon for gasoline were high. Prices for oils and kerosene also would be advanced in the East Coast area under the industry's program.

Use of railroad tank cars is steadily increasing, it was said, with new cars coming into the Eastern area from the Middle West in conformity with Ickes' request that 5000 to 10,000 cars be supplied from that area. The coordinator said that the latest figures he had showed the movement by rail of 326,000 barrels a day.

Ickes said that every effort is being made to prevent cross-hauling and other unnecessary movement, but indicated he had no intention of requiring the pooling of

"UN-DECORATE" YOUR CHRISTMAS TREES

Put loafing valves to work with GRAY VALVE REMOVAL



Save additional investment and worry over priorities by putting loafing valves to work! Somewhere in your operations, no doubt, you have inactive valves on your Christmas trees, valves that are loafing, not needed where they are, but that could be used to good advantage on other wells. Gray Valve Removal makes salvaging of valves easy, safe and profitable in these days when valves are hard to get. It can be used on all types of wells, regardless of pressure, because it utilizes equalized pressure. For example, a 3½ lb. Gray Valve Removal Plug can replace a 128 lb. valve, or a 10 lb. Gray Valve Reinstallation Nipple can replace a 93 lb. valve. By so doing, you not only save additional investment, but save steel, manhours, and machine tools that can be employed in other use.

Full details concerning Gray Valve Removal and Reinstallation will be furnished upon request, or see the Gray section in the 1942 Composite Catalog.

GRAY
TOOL COMPANY
HOUSTON

West Coast Distributor: WAGNER-MOREHOUSE, INC., Los Angeles

all supplies and the sale of gasoline as unbranded. He pointed out that the companies have spent millions of dollars in building up their brand names and would not like to see them thrown out the window.

A special committee was set up by the council to explore the price situation with Henderson, who had been asked to take immediate action on the application for an increase.

Extension Made for Crude Price Report

Extension until March 23 of the period granted sellers of petroleum in which to report sales under Price Schedule No. 88 was granted by OPA March 4.

Under the price schedule, companies were required to report all purchase prices for crude as of October 1, last, whether or not such prices were posted, and where contrasts were in effect on that date for the sale of crude at the well in excess of the posted price for the pool, authenticated copies of the contracts were to be filed within 30 days.

It was explained at OPA that the extension was granted when some producers indicated difficulties had been encountered in assembling the required data within the original time allowed.

Galbraith Contact Man With OPC

Reorganization of the Office of Price Administration raises J. K. Galbraith from assistant administrator to staff deputy administrator, in which position he will represent the administrator in contacts with OPC.

In addition, Galbraith will assist Administrator Henderson on policy matters and will organize and direct the work of the research and transportation sections and the questionnaire and financial reporting unit.

The shake-up also will result in the setting up of four new assistant administrators, one to be in charge of the fuels division, which will handle price problems of the oil and coal industries. No appointment to this position has yet been announced.

The assistant administrators in charge of the several divisions will be authorized to make decisions respecting maximum price regulations, subject only to review, if necessary, by the administrator or his deputies.

Research

Research is playing an important part in the development of the war program, it was asserted March 5 by Dr. R. R. Sayers, director of the Bureau of Mines, in reporting on the activities of his bureau for the past two years.

Long before the accelerated war production program began, Sayers asserted, the petroleum and natural gas division launched studies of problems relating to oil and natural gas production with a view toward conservation of resources and more efficient utilization.

Prominent among the activities along this line were surveys of crudes suitable for the manufacture of special aviation gasoline and the adaptability of refineries to produce that and other vital products, he said.

Also of vast importance to the war production cycle were expansions of the government helium plant and gas field for the purpose of increasing output. During the fiscal year 1941 production amounted to 16,250,000 feet, an increase of 72 percent over the preceding year.

"In the field of oil and gas development and production," Sayers reported, "the division continued research regarding practical methods of utilizing the pressure of natural gas in pushing petroleum through the sands and toward the surface in oil wells. Another investigation involves research in gas-condensate fields to obtain more efficient production and maximum yield. In these fields, the petroleum is dissolved in natural gas because of extremely high pressure. If the pressure is permitted to decline to the point where liquid condenses in the sand, much of the condensate never can be brought to the surface. The condensate frequently contains large proportions of material of high-octane rating and is important as a source of aviation fuel."

A number of other studies, such as the effect of gas-oil ratios and water saturation on productivity of wells, relation of reservoir-pressure decline to oil recovery, the function of water in production of oil, and the spacing of wells to capture the greatest amount of oil, also were pressed, the report said.

Investigation

Another investigation of the synthetic rubber situation was authorized by the Senate March 5. Approving the Gillette resolution originally aimed at a probe of alleged efforts of the oil and rubber industries to control the manufactured-rubber supply.

The resolution was approved after Senator Guy Gillette of Iowa agreed to have the inquiry conducted by the Senate Agriculture Committee instead of the special committee which he first sought.

There was no opposition to the investigation, although Majority Floor Leader Barkley criticised it because it duplicated work which is being done on the same subject by the Truman committee.

The resolution was broadened to cover studies of production and plans for production of alcohol as well as rubber, but retained Gillette's original provisions for an inquiry into the organization or organizations controlling or seeking to control rubber production, the patent situation and judicial actions which have been brought involving patent processes and control of manufacture.

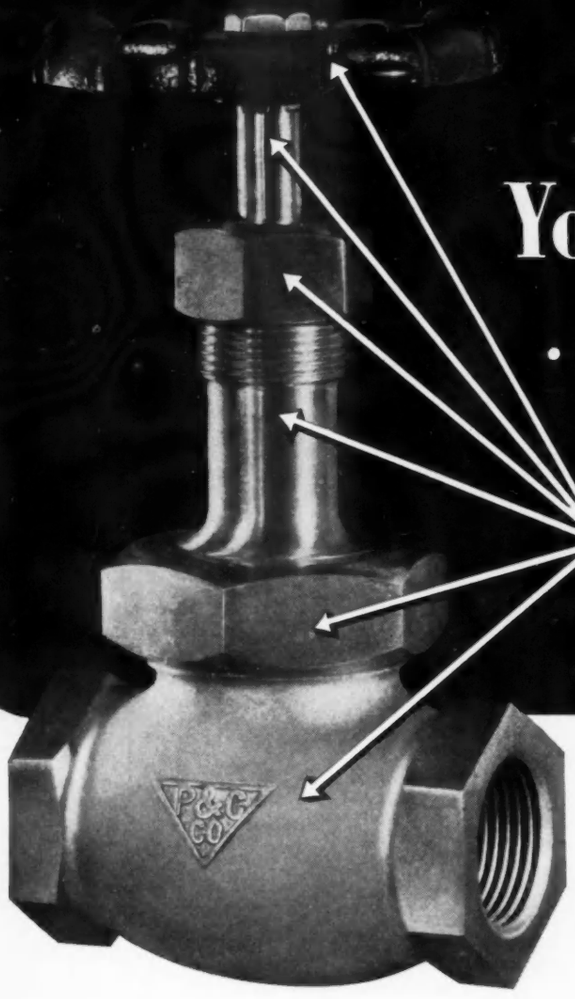
Secrets

Recognizing the military value of its statistics, the Petroleum Conservation Division this month announced discontinuance of its monthly figures on tanker and barge shipments from Texas and Louisiana ports.

Since average capacities are readily figured out, it was felt that the statistics offered a ready means for the possible evaluation of the tanker situation which might be of benefit to the enemy.

The discontinuance of the re-reports is in line with the recommendations of censorship officials in Washington to withhold from publication any statistical material regarding production, supplies, etc., which might be of military value.

This was the second group of oil statistics to be suppressed, OPC some weeks ago having discontinued publication of figures on East Coast stocks.



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{SAVE THIS VITAL METAL

Bronze is more precious than gold. It has become important to you, then, as a user of Bronze Valves, that Pratt & Cady patented the Bronze Globe Valve with renewable seat and disc—and that Reading-Pratt & Cady have continually developed the principles of that patent.

★ For example, when, through long use, a Bronze Globe Valve finally becomes worn, you don't need to replace the stout body of special hard bronze or the high strength rolled bronze stem. They are still in excellent condition. . . . Your maintenance job is limited to first regrinding to a fresh seat and then, finally, replacing no more than the seat and disc—using a minimum of metal that is scarce and of time that is vital. . . . So don't even think of *replacing* your Bronze Valves—MAINTAIN THEM CAREFULLY—REPAIR THEM—RENEW WORN PARTS.

If we can be of practical service, we'd like to help—in spite of the pressure of manufacturing schedules filled to capacity with the business of America at war. If we can, we will. Let us have the details of what you believe should be done for your valves.

As a matter of service to America, may we suggest that you sort all metal scrap carefully, protect it from the elements and pass it back to industry through a responsible dealer. Make this part of your program. There is a tragic shortage of scrap.

READING-PRATT & CADY
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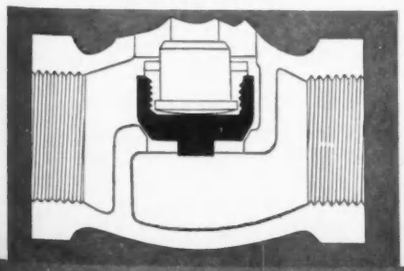
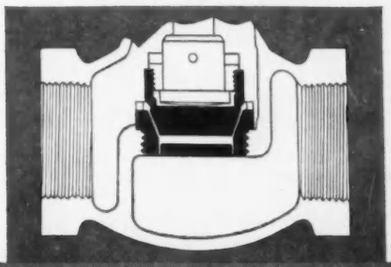
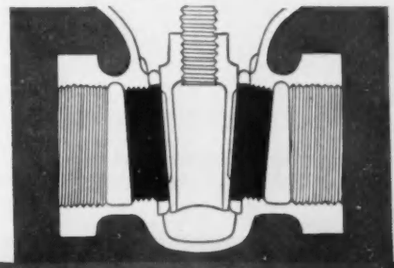
REGRINDING GLOBE VALVE
REGRIND AND RENEW



SEMI-PLUG TYPE GLOBE VALVE
REGRIND AND RENEW



BRONZE GATE VALVE
REVERSE WEDGE—RENEW



A Division of AMERICAN CHAIN & CABLE COMPANY, INC. Bridgeport, Conn.

PRACTICAL OPERATING HINTS FOR

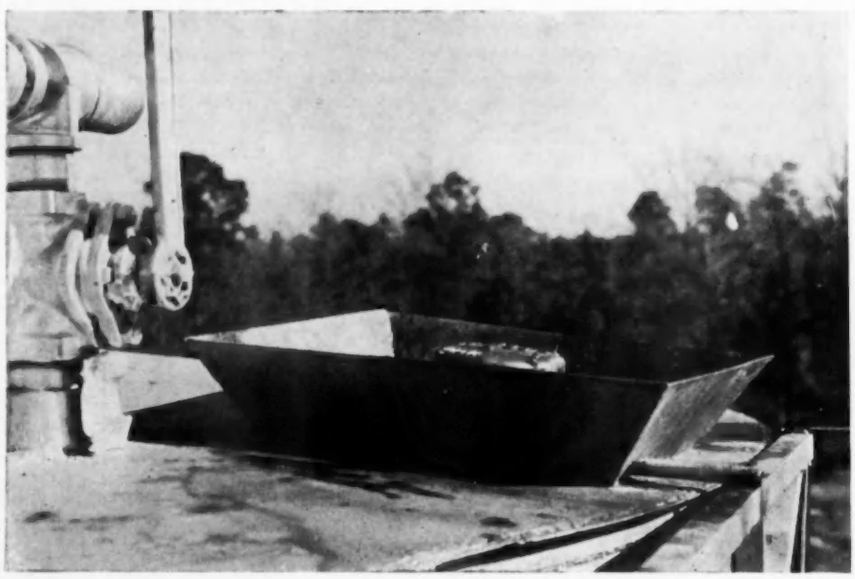
1. GAUGING

Hatch Pan Prevents Fouling of Deck

AN OPERATOR in the Nebo field of Central Louisiana places drip pans around the hatches on stock tanks to avoid the unsightliness which accompanies overflowing and splashing of oil down sides of tanks during gauging. The pans are rectangular in shape, and constructed to permit natural drainage of accumulated fluids into the tanks.

Pans are approximately 24 x 18 inches, with walls about four inches high. Walls taper or flange outward at their tops to create a funnel-shaped vessel. In construction, the pans are made of four steel sheets cut to proper sizes, with ends beveled at the correct angle to assure a snug fit when placed together. The ends are then welded to form a rectangular rim. No bottom is needed for the device, as it is constructed to set flush with the tank deck, and when welded around its circumference to the deck, provides a water-tight pan, open at the top. On the low corner nearest to the walkway, a ½-inch nipple about six inches long is welded near the bottom of the pan and extending through the wall to furnish a drain. A valve or stopper is usually provided to allow emptying accumulated fluids from the container when desired.

A slight overflow of tanks causes no troublesome damage, as the excessive fluid is caught in the pan, and later allowed to return into the tank. In addition, normal dripping and splashing from a gauge line is held inside the pan, helping to keep the tanks sightly, aiding appearance of the batteries and saving labor in cleaning equipment.



Flared sheet steel sides, welded to tank top, form effective collector for fluids spilled during gauging operations and maintain cleanliness.

2. FLOW HEATER

Water Bath Maintains Operating Conditions

FORMATION of hydrates in the flow line between well and separator usually occurs at some point downstream from the choke, depending on the length of the line, local conditions of temperature and line protection, and opportunity for hydrate collection.

To handle flow in one gas-distillate field, the producer uses a gas-fired hot-water bath to raise flow temperature above the hydrate-forming point. The heater consists of a cylindrical shell, with three 4-inch pipes or stacks welded over matching holes in the bottom sheet. Inside each of these stacks is a burner, using field gas, and so set as to direct its flame against the sides of the stack.

Flow-line coil in heater raises temperature above hydrate forming point.

Coiled inside the heater body, the flow line makes several turns between the elevated entering fitting and the exit tap, the entire coil being covered with a water bath. To prevent fouling of the water with leaves and other trash, a loose-fitting cover is set on the top of the heater cylinder, with space around the stacks to permit expansion and the escape of any steam generated if the bath be heated above 212° F.

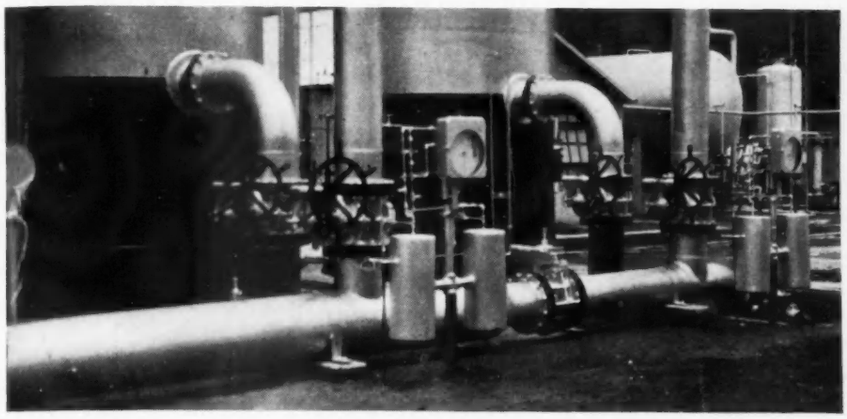
Make-up water is added to replace that lost by evaporation, and the heater drained if freezing weather threaten during periods when the unit is not in use.

3. METERING

Scrubber Tanks Trap Slugs in Liquid Flow

TO PROTECT the mercury in liquid-type meters from contamination by surges of fluid which may accompany gas in headers and meter runs, most recording instruments are provided with drip pots of small size. To forestall such adverse conditions as failure to drain frequently while fluid pours over into the mercury chamber as the result of inattention, one company has developed large scrubbers to prevent disastrous interruption of measuring facilities. These scrub-

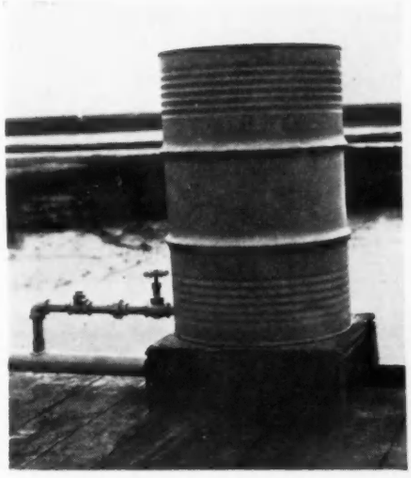
THE PRODUCTION MAN...



Oversize traps carried on brackets from meter stand serve to catch fluid and protect mercury from contamination or loss into flow line.

bers are mounted below the recorder with a cross connecting the two, and have convenient drain connections at the lower end. The large size provides sufficient time for the operators to make drains at infrequent intervals, or to stop and hold the flow of fluid before it can enter the mercury chamber.

Welding the two scrubbers to the supporting arm and carrying them on the same support as the recording device, the bulky scrubbers are not subjected to line vibrations, the only connection with the run being the flexible tubes normally used to tie-in meter.



Oil drum, mounted over flow line, dispenses treater into stock stream.

4. TREATING

Chemical Stock Tank Provides Feed Check

ONE operator in a marine area erects a steel oil drum at each tank battery to inject chemical into a storage tank for treating the fluid. The drum is mounted on a small wooden platform made of two 24-inch pieces of 2 x 6-inch lumber, stood on edge and connected by flooring made of 1 x 6-inch planks. With the drum mounted on top of this platform, it is thus supported above the ground or flooring to a height of 6 inches, allowing ample space for a 2½-inch line from the tank to pass underneath.

The drum is open on top, but an outlet is provided at the bottom, by drilling a small hole through wall of the drum and inserting and welding into it a short ½-inch nipple. A valve is placed next to the nipple, and the line extended by adding several additional short nipples, a union and a small check valve.

The line ties into the flow line from the stock tank. When chemicals are poured into the drum, they are admitted to the line at any desired rate by regulating valve on the feed line.

The line from the stock tank is connected to a pump which allows free circulation of the fluid throughout the line to the pump and return to the tank through another line as desired, with chemical admitted into the flow from the feeder. In this manner, an entire tank may be treated in a short time. By use of a manifold erected near the pump, fluid may also be diverted to another tank as it is treated, or it may be turned directly into transportation barges.

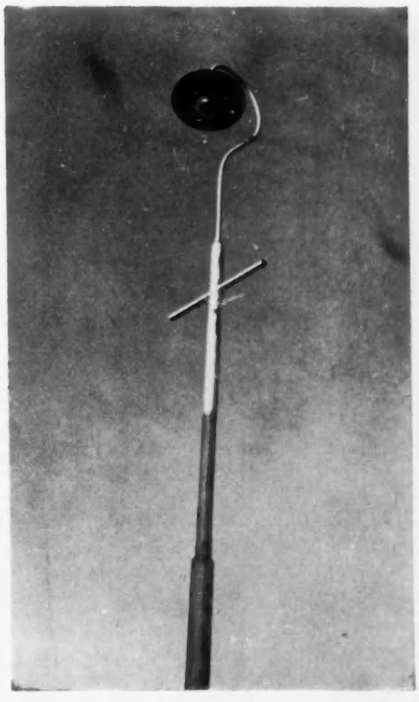
5. LIGHTING

Ladder Cross Bar on Post Cuts Hazards

ATTENTION given to the smaller matters pertaining to safety on the lease quite often proves to be of as much value as does a larger, more elaborately outlined safety program.

Typical of consideration being given to smaller items around the lease is the idea developed by one of the largest companies on the Pacific Coast who, realizing the danger when a man climbs the light standard, has made it requisite that a small cross-bar be welded to the pole at a point near the top. This cross-bar permits the ladder to be leaned against the pole with a greater degree of safety to the workman climbing up to service the light reflector or change the bulb.

A single piece of ¾-inch pipe approximately two feet long is used for the cross piece. A hole is first burned through the center of the light standard and the pipe is then slipped through it and welded in place.

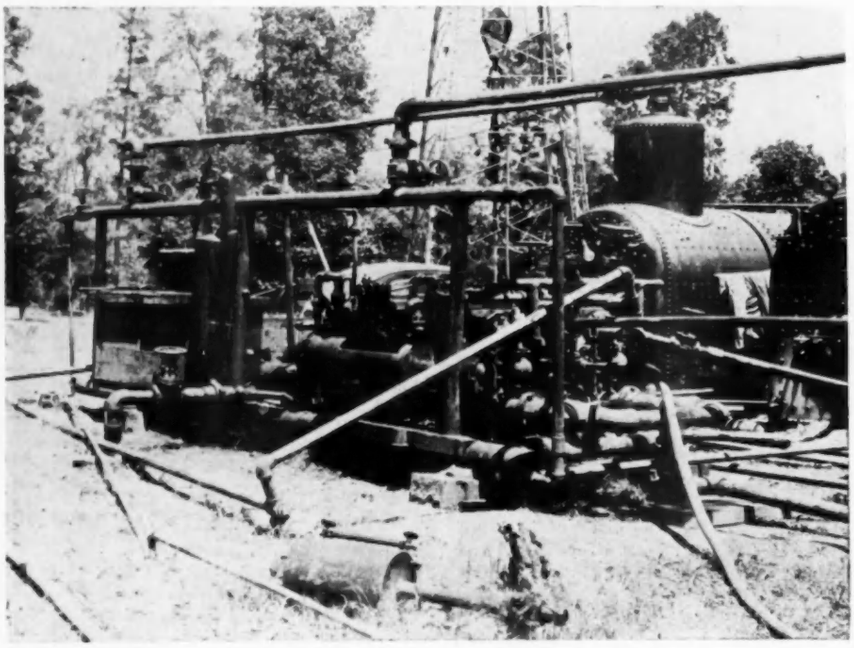


Welded integral with light standard, this member affords ladder support.

PRACTICAL OPERATING HINTS FOR

1. STEAM LINES

Overhead Manifold Utilizes Elevated Flow from Boilers and Provides Gravity Drain



Forming rear member of pump skid, this vertical steam distribution system saves space, protects lines from corrosion, and drains automatically.

BY ERECTING a steam distribution header at the back of the pump skid, one operator is able to bring the steam lines in overhead, out of danger of possible contact by men working around the pumps, and at the same time establish gravity drainage of any condensation in the direction of steam flow.

The distribution manifold is supported on two 4-inch legs, serving both for support and as leads for the boiler-feed pumps. End connections provide steam for turbo-generators and other rig auxiliaries, with traps on all drop-legs to remove moisture.

Mounting of the lubricator is simplified with this type of steam distribution, the elevated main giving direct feed into the lubricator for putting oil into the steam at the take-off of the derrick feeder.

Control valves at the tie-in of each boiler main to the manifold permit isolation of either end of the set-up in case of lessened steam demand or maintenance work on either boiler.

On the move, only dome and header unions are opened.

2. MUD TESTING

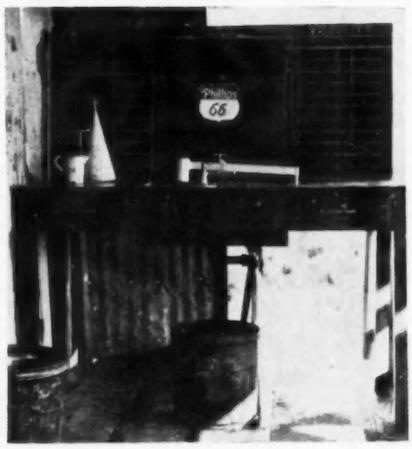
Unitized Test Stand Simplifies Operations

A COMPANY rig in an area where high pressure sands are often penetrated uses a handy table for localizing mud testing apparatus, and a chart permanently attached to the table for recording at regular intervals the weight and viscosity of mud returns, as well as sand percentage. This table and attendant equipment are located on flooring provided for it in a place near the mud ditch, in a protected spot removed from severe rig vibrations and convenient for catching samples of mud returns.

The table is made of wood, with a height of approximately 30 inches. A large flat top composed of two sections each about two feet long by three feet deep furnishes ample space for testing equipment, while in the center the two portions are separated by a metal sink which is equipped with a valve for water connection. In the rear of the table, 1-inch pipe connects to the valve and ties into the water line, supplying water for the testing apparatus. A drain is placed at the bottom of the sink.

Two drawers located under the two flat portions of the table provide for storing small articles and mud testing equipment.

Erected upright at the rear of the table top is a black board approximately 6 feet long and 30 inches tall, also divided into two portions by a plaque bearing the company insignia. To the left of the insignia is a column marked in white lines to designate weight at half-hour intervals. On the right, a similar chart is placed for recording viscosity at the same intervals. The exact time of testing is stipulated on the charts, furnishing a visual record of readings and time of day the tests were taken. Directly over the insignia, space is provided on the blackboard for marking sand content.



Table, drain and blackboard combine to speed mud and sand determinations.

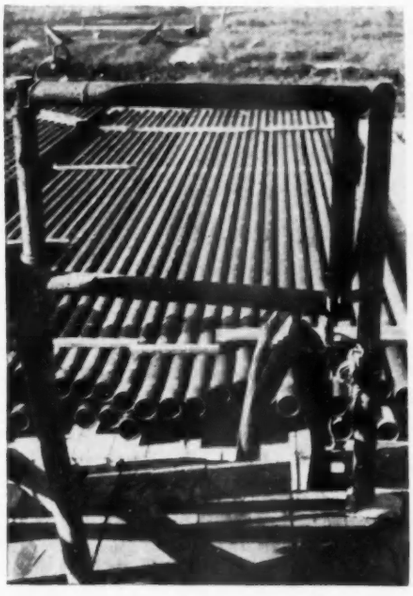
THE practical operating hints for the drilling rig and production man, appearing in these features each week, are secured from oil fields everywhere and offer suggestions that will help to improve field efficiency and safety. The items give an excellent picture of the remarkable ingenuity being exercised by the operating divisions of the industry. Contributions to these features will be paid for at the rate of $5 for each illustrated item accepted. Address contributions to "The Editor, THE OIL WEEKLY, Houston."

THE DRILLING RIG . . .

3. ELEVATORS

Floor Enclosure Gate Aids Equipment Moves

WHEN elevator links are removed from the hook during normal drilling operations, the task of setting them on the ground alongside the derrick is greatly simplified if a gate be cut through the usual floor railing, and this opened to permit the elevator to be slid along the floor and lowered over the edge and the top of the links tied to the fence stanchion with a piece of soft line.



Hinged section of rail at pipe ramp avoids high lift of elevator bails.

4. TOOL RACK

Hangers on Girt Hold Assorted Equipment

SMALL, movable racks for the temporary disposal of tong parts, wrenches, special tools, and miscellaneous cordage on the derrick floor may be easily constructed by the company welder.

Ten-foot lengths of 2-inch tubing are flattened for a foot or two on one end, and then bent over into a hook. At several points, on alternating sides, along the length of the pipe, short pieces of sucker rod are welded. Each pin is pointed upward at a slight angle so that articles hung on them will not fall off.

Movable racks with alternate pegs provide storage for small parts.

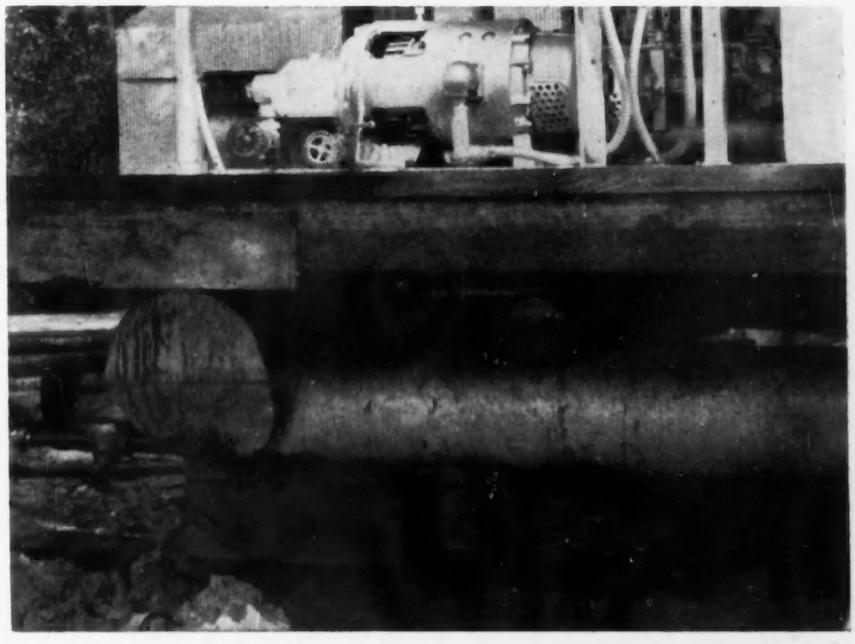
These portable hooks are hung over the first girt, and placed at points around the edge of the derrick, preferably near the corners. When drilling equipment is moved from one well to another, the racks are stowed away with the other material, and at the new well, may be hung up ready for use as an aid in the rigging operations.

5. FOUNDATIONS

Wood Blocks Prolong Steel Skid Service

STEEL skids, although made from otherwise unusable pipe, are going to be increasingly hard to replace, due to even greater impending metal restrictions. On this score some companies are already beginning to take extra precautions to prevent deterioration of skid members.

One company, working in swampy terrain, uses heavy timber blocking between the timber mat on the ground and the skids, raising the equipment higher than normal, but interposing an additional protective space equal to the thickness of the timber between ground water and the skids. Such additional protection greatly prolongs skid life, by removing danger of corrosion in contact with water-soaked ground or constantly wet planking.



Blocking between timber mat and base of skids affords clearance against ground water and aids checking and protection of welded skid units.

Vast Reservoir of *Scrap*

By ELTON STERRETT,
Equipment Editor

Tapped When Oil Men Go "All Out" in Texas Program

EARLY and incomplete figures on the Texas Mid-Continent Oil and Gas Association scrap collection drive show around 5000 tons of scrap already shipped to Texas foundries and Eastern mills in the first week of the campaign, General Chairman Charles F. Roeser reported Saturday.

"This is only a preliminary figure from some of the larger collection centers," Roeser explained. "It includes only scrap actually loaded into cars and now on its way. Much more scrap has been piled up awaiting loading, and more scrap is moving into the collection yards all the time.

"The amounts collected surprised some of the chairmen as well as the railroads, and in some cases there were not enough cars on hand to ship out the scrap. This is rapidly being rectified, and a large additional quantity should be moved next week."

The rainy weather in most areas and snow in some has also slowed down the movement of the scrap, he said.

"Many operators who had piled up large quantities on their leases have been unable to get in with trucks to load this and move it to the collection centers," he added. "The result is that we will have considerable more coming into the yards as soon as the ground gets solid enough for the trucks to move in, which we expect next week if fair weather prevails."

District Reports

As the week ended, county chairmen were starting to report to headquarters in Dallas, with reports due from most of them during the coming week.

Walter David, chairman for the Borger area, telegraphed: "To date we have shipped 150 tons of cast iron, 1100 tons (22 cars) of scrap steel. Have 35,000 pounds of aluminum, copper and brass, not yet sorted and shipped. We have good prospects for 900 tons of steel and 150 tons of cast iron. Practically all has been shipped to eastern mills."

J. B. Wyly of Graham, co-chairman for Young County, reported his area had received 216 tons of steel and shipped 5 carloads averaging over 40 tons each, with one of 52 tons of cast iron. He notes, "This did not include farmers, ranchers and others in the scrap drive 100 percent."

Ward County, with E. V. Hubbard as chairman, reported 112 tons of scrap metal and 1 car of rubber tires amounting to 21 tons or more.

Mitchell County, headed by Frank Kelley of Colorado City, has already shipped 2 cars, totalling 76 tons, with 14 tons more of cast iron and 7 more of scrap steel.

From Pampa, Chairman C. K. Trease estimated a total for his area of 900 to 1000 tons, with 485 tons already shipped.

SOUTHEAST TEXAS *"GETS IN THE SCRAP"*—Leases, yards and plants of the Jefferson-Hardin counties district are yielding large amounts of highly desirable scrap, which is being loaded into cars for immediate shipment to steel mills and foundries as fast as collection progresses. Scott W. Myers, Unity Oil Company, Beaumont, pauses in his work as chairman of the scrap drive in both counties and the crane suspends a load in mid-air while the cameraman records activity. B. G. Dowell, Saratoga, is co-chairman in charge of oil industry scrap collection in Hardin County.

He writes, "Even though collection week is over, we are continuing our drive and we will have a lot more coming in."

The Wichita County chairman, Jerry Vinson, and his committeemen have collected 766 tons in a week, "and are only getting started."

One West Texas operator alone reported he had collected 47 tons from his Odessa-district leases, and between 5 and 7 tons from his Howard-Glasscock properties. A North Texas operator collected and trucked in 40 tons.

B. L. LeFever of Big Springs, chairman for that area and also vice president for West Texas of the Texas Mid-Continent, reported his group had loaded and shipped 7 carloads and had 3 more ready to load.

Joseph M. Weaver of Eastland, vice president for West Central Texas of the Texas Mid-Continent and chairman for Eastland County, has been shipping out an average of 3 carloads a day.

The Talco drive yielded 2 carloads in the first few days, both of which were shipped out.

"By the end of next week, we should have a fair idea of how much collection week netted," Roeser said. "Then we will start in on the job of seeing that scrap continues to be moved as it accumulates, for the duration of the emergency."

WEST TEXAS *"GETS IN THE SCRAP"*—Much oil industry steel and iron scrap comes in sizes too large for handling into railroad cars without special equipment, and far too bulky for charging into open-hearth steel furnaces. A worker with oxy-acetylene torch is cutting an old tank into commercially sized scrap in the yard at Big Spring, Texas, preparatory to loading aboard cars.

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NORTH TEXAS *"GETS IN THE SCRAP"*—Some of the scrap collection committee in Wilbarger County who enlisted the 100 percent cooperation of the 60 operators in the county. From left to right the members shown are: B. W. Williams, Purchasing Agent, W. T. Waggoner Estate; Allan Johnson, Superintendent, Lido Oil Company; H. O. Gibson, Superintendent, Nadel & Gussman; G. M. Shanor, Manager Oil Division, W. T. Waggoner Estate, Chairman; Claude Bush, Superintendent, Staley-Wynn Corporation; A. K. Thorn, Superintendent, W. T. Waggoner Estate; L. R. Stephens, Superintendent, Phillips Petroleum Company; Wendel Haugh, Superintendent, Lawson & Lawson; Earl Dowse, Superintendent, Cities Service Oil Company.

Government Official Pleased With Industry's Initial Scrap Work

Oil Country Expected to Supply Much of 6 Million Tons Needed This Year

INITIAL returns from the drive to salvage scrap in the Mid-Continent area indicate that 4410 tons,* equal to 110 carloads of metal have already been secured, it was disclosed this week by George T. Weymouth, chief of the industrial salvage section of the Bureau of Industrial Conservation.

Commending the way in which the oil industry has responded, Weymouth mentioned that Sun Oil Company had developed 2000 tons of iron and steel, 6000 pounds of brass and 12,000 pounds of rubber, and that a large eastern company reported 6000 tons of metal while another promised 15,000 to 20,000 tons from demolition of obsolete equipment in six refineries.

The report on the Texas oil-field drive was submitted to the division by George C. Gibbons of Dallas, executive vice president of the Texas Mid-Continent Oil and Gas Association.

"This report," Weymouth told THE OIL WEEKLY, "is a definite indication that the oil industry will be extremely helpful in supplying critically needed scrap materials for war production purposes in large and frequent quantities."

He emphasized the fact that THE OIL WEEKLY and other members of the trade press have given hearty cooperation in the drive.

To handle the collection of scrap from the industry, M. R. Singleton, vice president of Valvoline Company, has been appointed as "petroleum coordinator" for the division, to direct the effort.

To produce the 90,000,000 tons of steel which it is estimated will be needed this year, 32,000,000 tons of scrap will be required, Weymouth said.

"The oil industry is probably the greatest buyer of steel in the world," he pointed out. "From the casing in the well to the pumping machinery, to the pipe lines, to the refinery, to the tankers, to the ocean terminals, to the bulk plants, to the filling station, all is metal—steel, iron, copper, brass, etc."

We must make up an estimated shortage of between 5,000,000 and 6,000,000 tons of scrap during the balance of 1942, he declared, in commenting upon the part the industry can play in the project.

"The oil industry has been called upon many times to shoulder terrific burdens and to operate under great hazard in their divisions of production, transportation, refining and marketing," he said. "These situations they have always met."

"But members of the oil industry were never faced with a greater challenge than they are today, when they are asked to closely survey every physical unit, in oil fields, pipe lines and refineries, etc., and proceed with a program of demolition, and to turn these units into scrap and put them in the channels where they will find their way to the steel mills, to keep up the program of production in planes, tanks, ships and guns.

"Mr. Gibbons' report is a definite demonstration of what the industry is doing to meet that challenge."

* Later reports showed in excess of 5000 tons already loaded.

New Mexico Starts Scrap Drive

THE second state in District 3 to organize for scrap collection got its program under way Saturday as New Mexico opened its drive, Charles F. Roeser, general chairman, announced.

The Petroleum industry collection program, undertaken by the Texas Mid-Continent Oil and Gas Association at the request of the War Production Board, is being directed in New Mexico by the New Mexico Oil and Gas Association.

Hugh L. Sawyers of Roswell, secretary of the New Mexico organization, set up collection committees in the four principal oil-producing counties. The chairmen named are:

Lea County: Tom Mason, Continental Supply Company, Hobbs.

Eddy County: Tom Sivley, Union Supply Company, Artesia.

McKinley County: Ras Barker, Petroleum Products Manufacturing Company, Prewitt.

San Juan County: Harry Clark, Continental Oil Company, Shiprock.

"While much of the New Mexico scrap has been moved out as it accumulated," Roeser said, "we nevertheless are expecting a considerable quantity to result from the efforts of New Mexico operators.

"Many Texas operators have surprised themselves at the amount of iron and steel and other metals and rubber they found on their leases. For instances, I had a letter last week from one oilman saying that he had cleaned all his leases a short time ago, and had no scrap at all. Yesterday I had a letter from the same operator that he had had his men go over his leases again and found 50 tons more which he was now moving. Other operators may have a similar experience if they do the same thing."

Oklahoma Ready to Map Scrap Program

E. H. MOORE, president of E. H. Moore, Inc., with production in

E. H. MOORE, chosen head of the Oklahoma committee for organizing a scrap collection campaign in that state, is president of E. H. Moore, Inc., and well known in the oil industry, being president of the Independent Oil & Gas Company which opened the Greater Seminole area in 1926, and heading his own firm when the first well was drilled by it in the Fitts pool in 1933.

Oklahoma and Kansas, has been Oklahoma business and industrial men which will meet Tuesday, March 10, in Oklahoma City, to complete organization of a state-wide iron, steel and non-ferrous scrap drive chosen to head the organization of which will include the oil industry among others making or having appreciable amounts of scrap.

In view of the success of the oil industry drive for scrap in Texas, and due to the strategic location of oil companies throughout Oklahoma, it is considered probable that the campaign will be centered about the oil industry and that it will serve as collecting agency for scrap concentration in points where no existing system for scrap disposal is operating.

Scrap NOTES

• • • The oil industry is interested in seeing that its scrap gets back to the steel mills, not refurbished and sold for use where other and non-ferrous material could serve. Proof positive was given one scrap dealer who answered a call to pick up a load of six-inch line pipe, retired from service across a salt flat. On arrival, the pipe was found to have been flattened, the oil company superintendent having had a tractor driven over each joint from end to end. He was, he said, taking no chances on the scrap not getting back to the mills for the making of new and much needed steel. The dealer bought the flat pipe at the standard price, and still was able to make his usual handling fee.

Any material which must be dismantled to be moved, such as wrecked derricks, bridges, pipe manifolds and heavy machines, is classified as "unprepared" scrap, and is subject to a ceiling price $2.50 per long ton lower than that for similar material in size and condition to be handled by the scrap dealer and transportation systems. Further sizing and sorting, as to "charging box" or electric furnace scrap, is done by the scrap dealer as a part of his services, for which he is paid by the manufacturer absorbing his materials.

• • • A servicing derrick, collapsed by a wind storm, when offered to a scrap dealer was by him classified as "unprepared" scrap and as such was subject to a deduction of $2.50 per (long) ton over the fixed price for prepared scrap of like grade. The offer was refused, and men of the maintenance gang volunteered their services during spare time for the dismantling job. Almost at the outset it became apparent that only a small percentage of the structural members was deformed, the remainder being salvaged without recourse to torch cutting, and nearly all bolts, nuts and tie plates went directly into the company warehouse.

As soon as the management discovered the salvage value in what had been regarded solely as a hazard and an unsightly eyesore, the maintenance gang was given credit for the time worked, the unusable rejects from the derrick were placed with the disposable scrap, and a stock pile of straps, angles and I-beams provided which would furnish raw material for all lease maintenance of that type for a long time to come.

• • • *The junk dealer makes expenses handling true scrap; his big profit comes from the material scrapped which still has salvage value. Checking scrap for possible reclamation before discarding often pays high dividends for the time and effort required.*

• • • Unlike the highly publicized aluminum drive, which sought contributions from the public, the scrap drive now under way in the oil industry does *not* ask donations. Companies are asked only to get together their otherwise useless discarded iron and steel and *sell* the accumulation, through a recognized scrap metal dealer or broker. The cash return from material thus sold should more than compensate for any additional expense incurred in collecting and disposing of the scrap.

• • • Segregation of oil-field rubber scrap into two classes, one clean or uncontaminated by oil and the other oily, will pay dividends of 100 percent on the clean rubber. Such items as drill pipe protectors, slush pump gaskets and discarded blow-out-protector-ram rubbers, for instance, are worth twice as much when clean as if oil-soaked. Unless separated, however, a junk dealer will pay only the rate for oily scrap, profiting handsomely from a little sorting which could easily be done on the job.

Scrap shortage in 1942 is expected by Washington officials to cause a drop in steel production for the year over the tonnage produced in 1941. Much of this shortage can be made up by utilization of materials now discarded and all but forgotten around the lease, pump station and refinery.

We've got to put steel into the Nation's scrap pile to keep our ships out of Davy Jones' junk yard.

Let's Make It Nationwide

THOSE members of the oil industry operating in the State of Texas have convincingly demonstrated effective cooperation in a National need during the first weeks of the recently inaugurated drive for the collection of iron and steel scrap. Many thousands of tons of scrap have already been collected, weighed, paid for, and loaded into cars for shipment to foundries and steel mills.

But one state, one section alone of the industry cannot furnish scrap enough to meet the steel industry's pressing need. Not all the scrap from the oil industry in all the producing and refining states can suffice. It is a case of attempting to get together as much material as is available everywhere, in order to cut the deficit to a minimum.

In this collection of scrap for steel making, the oil industry is not only performing an urgently required patriotic service, in thus making available increased tonnage of material, it is also helping to make possible a greater allocation of iron and steel and products, incorporating them to the oil industry. Direct military needs, of necessity, receive material allotments first, the remainder being distributed as far as it will go toward satisfying the demands of industries most closely allied to war effort. Thus, the nearer the required steel tonnage is approached, the greater the store which the oil industry, among others, will divide in meeting its requirements for the coming year.

With Texas' fine record to shoot at, and with the plan as worked out and so successfully applied in the drive throughout over 100 producing counties in the state available for adaptation to other local conditions, it would seem to be up to the other oil-producing and refining states to inaugurate steel and iron scrap programs, not as sporadic clean-up efforts, but as initial moves in a continuing program of scrap conservation, collection and forwarding.

To stay in the scrap, let's *all* get in all the scrap.

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IN KHAKI OR BLUE

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The Week's News

Ickes Urges Oklahoma Wildcat Exploration

Petroleum Coordinator Harold L. Ickes, declaring that Oklahoma was drawing too heavily upon its oil reserves, has called for an increase in wildcatting to seek out new fields.

In a letter to the Oklahoma Corporation Commission, Ickes said that only Illinois was making heavier demands on its known supply among the nine principal petroleum states.

Ickes said he would continue to urge "a greater amount of wildcat drilling to offset steadily increasing withdrawals from known pools that must be made during the war, no matter how long it lasts." He said there was a greater need than ever before for the initiative and enterprise of the industry and "you may be assured this office will not recommend or approve any unnecessary measure that might throttle these vital qualities."

He observed that Oklahoma produced 15.3 percent of its established oil reserves last year, which was inconsistent with the rest of the nation except for Illinois, which "turned out 48.8 percent of its reserves."

Texas was at the bottom of Ickes' list, recovering but 4.7 percent of its established supply.

Oklahoma had 5.3 percent of the nation's reserves at the opening of 1941, yet it turned out 11 percent of the nation's production, Ickes continued.

Ickes assured the commission no limits would be placed on stripper and secondary production—a prime factor in Oklahoma—except in unusual circumstances.

Commission officials said Oklahoma since January 1 had been operating within federal allowables, but protested January and February quotas on the theory they were below par.

Stroop Heads Committee Studying Plant Protection

Methods of protecting petroleum facilities in all branches of the oil industry are being studied by the Petroleum Industry War Council's Committee on Protection of Petroleum Facilities. This committee has taken over work of national and regional committees which had formerly been concerned with the safeguarding of oil storage. Executive secretary of the committee is D. V. Stroop, Suite 2017, 50 West 50 Street, New York.

Ask Information on Pipe Line Construction Plans

Pipe line operators of District 3, OPC, have been asked by H. C. Wiess, Houston, chairman of the transportation committee for the district, and president of Humble Oil & Refining Company, for notices of intent on contemplated line building in 1942, listing all construction proposed and tonnage, sizes and mileage involved.

The information is to be turned over to H. A. Gilbert, director of transportation in OPC, to enable his office to negotiate for procurement of as much of the material requirements as possible.

Because of the steel shortage, there is urged a limitation of work to minimum projects needed in prosecution of the war.

East Kansas Operators To Learn About M-68

A. F. Schoeppel, chairman of Kansas Corporation Commission has announced a special meeting of oil and gas men of eastern Kansas scheduled for March 11 at Representative Hall, Topeka. Juston Wolfe and John F. Jones, counsels in the gas and oil divisions of OPC respectively, will be present. The meeting will attempt to clarify the position of the eastern Kansas operators under M-68.

Texas Mid-Continent Sets Convention Date

Dates for the annual meeting of the Texas Mid-Continent Oil and Gas Association were announced Saturday by President George Sawtelle as Octboer 8, 9 and 10.

Selection of Dallas as the convention city also was announced. The 1941 meeting was held in Beaumont where a celebration of the fortieth anniversary of Spindletop was staged.

The 1942 meeting will be the twenty-third annual gathering of the Texas association, service and research organization of Texas oil and gas operators.

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OIL IS AMMUNITION ★ KEEP 'EM PRODUCING

North Texas Association Hears D. R. Knowlton

Minimum of 4000 wildcats should be drilled in 1942 to maintain crude reserves of the nation within a safe margin was emphasized by Don R. Knowlton, director of production, Office of Petroleum Coordinator, who was a guest speaker at the annual meeting of the North Texas Oil & Gas Association at Wichita Falls, February 28. Present fields, taken as a whole, are not capable of increasing their current yield for any sustained period. He stated that it is significant that production in 1941 was over three times the volume of reserves added through new discoveries and new oil zones in established fields although the volume of wildcat activity reached a new peak. Knowlton added that the industry must drill 13,000 oil producers in 1942 in order to properly maintain the ratio between reserves and consumption, despite the fact that materials will likely be restricted to 60 percent of the amount used in 1941.

He pointed out that these factors were considered when the War Production Board issued Order M-68 so as to limit the use of Critical materials to the drilling of exploratory tests and wells in proved areas that will develop the maximum quantities of reserves.

Frank Buttram, president of Independent Petroleum Association of America, stated that inexcusable red tape and conflicting orders have greatly retarded the resumption of wildcatting and drilling in areas that qualify for priorities. He charged that prices on petroleum products have been frozen at an uneconomic low level, and that the ceiling must be raised in order to enable the industry to proceed with vital oil explorations.

J. A. McCarty, veteran Wichita Falls producer, was elected president of the association, succeeding C. J. Tucker. Fred Sehmann and Homer Lee were chosen executive vice president and vice president, respectively.

Illinois Opens First Bids on Oil Lands

Lewis Production Company, Pittsburgh, submitted a high bid of $30,000 on March 4 to the Illinois petroleum lease commission for a permit to conduct oil exploration on 700 acres of land at the state-owned farm near Mt. Vernon.

The award marked the opening of state land for active field development. The tract is located in Jefferson County, center of productive activity.

State Finance Director George B. McKibbin said no award will be made until the commission studies five other bids submitted by competing firms. The commission will reserve the right to reject all bids, McKibbin said.

The Lewis company maintains Illinois - Indiana offices at Mt. Vernon. Other companies submitting bids were: The Texas Co., $18,422.40; Gulf Oil Co., $13,500; Sun Oil Co., $12,240; J. W. Menhall Co., Benton, Ill., $7,000, and The Weiser Oil Co., Sisterville, W. Va., $5,500.

The permit to be awarded is con-

fined solely to exploration rights, and the winning bidder will be entitled to survey the entire tract for productive locations and then select 240 acres on which drilling operations may be conducted. The remainder of the tract eventually will be resubmitted for bids.

The commission, which was created at the last regular session of the Illinois Legislature, probably will meet again this month to decide on outcome of current bidding. Other members of the commission are Gilbert E. Keebler, state administrative auditor; and Dr. M. M. Leighton, head of the state geological survey division of the state department of registration and education.

Government Completes Helium Gas Producer

The Helium gas producing area in Potter County sector of Texan Panhandle recorded a completion when U. S. Bureau of Mines' Bivins 4-A gauged 7,950,000 ft of 700-pound-rock-pressure gas from broken pay 3390-3680 ft, total depth 3692 ft. Pipe is being run for completion of another well on this structure.

Property Sale: In Hutchinson County, Hollingsworth Drilling Co. paid $250,000 for Cy Rieger et al's Groves lease, embracing the south 320 acres of TC Ry 28, blk M-23, with 5 pumpers and a drilling test. This property has produced approximately 100,000 bbls oil.

Michigan March Quota Left 125 Barrels Per Well

A flat allowable of 125 barrels per day per well, effective February 15 in Michigan, will be continued for March. It applies to the four flowing fields in the basin area, Reed City, Roscommon, Winterfield and Adams.

Officials estimate the March quota of 49,500 barrels per day set by OPC could be met without changing the per-well allowables. Michigan over-run both the January and February OPC recommendations.

Effective March 1 all wells on 40-acre units in fields where the original spacing pattern was 20 acres will be permitted an allowable factor of 1½, Hoffmaster said. This will affect several wells drilled since December 23 in the Reed City and Roscommon fields, and result in an allowable of 187 barrels for wells on the bigger units.

Oil Fire Fighters Permitted On Roads in Blackouts

Distribution of state emergency vehicle permits, so that they can use the highways during blackouts, has been made to 167 California oil industry automobiles and trucks by the industry's oil industry protection committee. These permits will enable the industry to assemble men and fire-fighting equipment in case of an oil field or refinery fire, even though general use of the highways may be restricted. Each vehicle bearing a permit will also be equipped with blackout lights and other accessories required by the state.

The permits are issued by the State Department of Motor Vehicles and will be cleared by the Oil Industry Protection Committee insofar as the industry is concerned. Only a few industry vehicles were understood to have been supplied with the permit when the early Wednesday morning air raid alarm blacked out the Los Angeles basin area.

Michigan Gas Line Work Has Made Little Progress

Panhandle Eastern Pipe Line Company has asked authority of the Michigan Public Service Commission to construct two short spur gas lines from the company's main lines now under construction.

The company seeks permits to build 3½ miles of 6-inch line off the main line to Battle Creek and 7½ miles of 4-inch from the main line to Adrian. Less than 30 miles of the projected 255 miles of main line to be built by Panhandle in Michigan have been completed.

Venezuelan Production Continues to Increase

Breaking one monthly production record after another, Venezuela climbed another peg in December with an output of 23,194,180 barrels, a daily average of 750,000 barrels. December production was 7 percent greater than that of November. All the major fields of western Venezuela increased production in December, with Bachaquero showing the sharpest rise, 69 percent. Likewise, in the east production rose in all the principal fields.

Trinidad-Venezuela Divide Marine Oil Area by Treaty

Venezuela and Great Britain have signed a treaty which divides between the two countries the Gulf of Paria, between Trinidad and eastern Venezuela, for purposes of submarine oil exploitation. Venezuela obtains rights to 5600 square kilometers, and Britain gets 3600. Possibility of oil in the region lies in the fact that the Gulf of Paria is on a line between the northeastern Venezuela fields and Trinidad.

Through another treaty signed at the same time, Britain ceded to Venezuela the small island of Patos, also a petroleum possibility, lying between eastern Venezuela and Trinidad.

Drilling of Two Wildcats In Colombia Planned

Exploratory drilling in a 494,000-acre region in the department of Magdalena, Colombia, hitherto held up by suits filed in the department, may get under way soon with the drillings of two tests. A lawyer of the government's oil department recently investigated the suits and reports they lack foundation and impede government plans to grant concessions. In the department of Magdalena, Shell Oil Company of Colombia affiliates are prepared to spud in two wildcats, El Dificil 1 and El Doce 1.

Turner Valley Output Crowding Line Capacity

Construction of an additional pipe line between Calgary and Turner Valley may be necessitated if the field continues to produce oil at the present unprecedented rate, it was stated in oil circles recently.

The system of Valley Pipe Line Company is operating at full capacity transporting over 28,000 barrels daily to Calgary. For the first half of February, Turner Valley production averaged over 28,000 barrels daily. These figures do not include 1036 barrels of natural gasoline.

All but 1350 barrels of oil per day, which represents crude and natural gasoline used in the gas and oil products plant in Turner Valley, is transported to Calgary over the pipe line system or put in field storage.

Recent increases in oil production are due to testing operations at a number of recently completed wells in the north end of Turner Valley, including the Miracle 2, Foothills 10 and Atlas British Dominion wells. Also on test are Home-Millardville 9, Alberta Pacific Royalties, Foothills 11 and Anglo-Canadian 11.

There are now 202 oil producers in Alberta, comprising 180 (including three shallow wells) in Turner Valley and 22 small producers in outside fields in the province. There are 28 wells drilling in the valley and 9 in outside fields.

Commotion Creek Test Will Continue Drilling

The British Columbia government will continue drilling operations at Commotion Creek, in the Peace River area, on the advice of Dr. W. E. Hume, geologist, borrowed from the federal government to study the project.

Hume has recommended that the present hole be continued for 1000 feet. Then the information obtained regarding the geology should be carefully reviewed and a final conclusion reached whether the work should be continued or the hole abandoned.

South American Institute Has Four Sections

The South American Petroleum Institute is rapidly getting under way with the organization of four national sections. The first section was formed in Uruguay last year. Subsequently, sections in Peru, Argentina and Chile were set up.

Designation of the city where the institute will have its headquarters will be made by the national permanent council, which will be established after five national sections have been created in South American countries. An international meeting is scheduled for next month in Montevideo in expectation that the fifth section will have been formed by that time.

Second Well Completed In Guarico State

Prospect of a new field in central Guarico state is opened by completion of Sociedad Anonima Petrolera Las Mercedes' test, Mercedes 2, which is about 130 miles west of El Roble field. On test, it flowed 363 barrels daily of 35° API. crude through ¼-inch choke. Drilled to 5586 feet, No. 2 is about ½-mile south of Mercedes 1, which was abandoned last summer as non-commercial. Equipment is being moved from No. 2 to location for No. 3, for which derrick is complete.

Louisiana Spacing Order Ruled Out by Court

Judge Nat W. Bond in Orleans Parish district court ruled unconstitutional Act 157 of 1940 under which Louisiana Conservation Commission sought to regulate gas well spacing and unitization and enjoined commission from enforcing 320-acre space and unitization rule in Logansport gas field, DeSoto Parish, Plaintiff The Hunter Company of Shreveport. Constitutionality of law was involved in commission's order 28-B.

Markets Reflect Disruption Of Tanker Transportation

Increased seriousness of the East Coast oil shortage highlighted latest statistics of the industry, for the week ended February 28, as lack of adequate tanker tonnage forced a further large draft on Eastern storage of principal products, while stocks accumulated on the Gulf Coast, making necessary proration of purchases of crude in Texas, New Mexico, and Louisiana.

Between February 21 and 28, there were reductions in East Coast stocks as follows: gasoline, 465,000 barrels, from 19,492,000 to 19,027,000 barrels; distillate fuel and gas oil, 656,000 barrels, from 9,053,000 to 8,397,000 barrels; and residual fuel oil, 214,000 barrels, from 7,590,000 to 7,376,000 barrels. These withdrawals occurred because of retarded shipments into the district, although crude oil was available in sufficient volume to permit refiners to maintain runs to stills at practically the same subnormal rate as in the previous week, while daily average gasoline production was up about 15,000 barrels.

Tank Car Shipments Off

Supplies of crude and refined products brought into the East Coast by tank cars during the week ending February 28, averaging 323,775 barrels per day, fell off 1 percent from quantities brought in during the preceding week, because of a small drop in the number of cars arriving daily. However, the latest figures on tank-car shipments show an encouraging increase over the 256,725 barrels per day during the week ending February 14.

Plans under consideration to allocate use of tankers to bring greater quantities of fuel oils to the East Coast had not been put into effect at the close of last week, although announcement of a schedule has been expected from Washington. Meanwhile, tanker sinkings continued off the Atlantic Coast. Latest announced losses were the torpedoing of the 7451-ton tanker *R. P. Resor* and the 10,227-ton tanker *W. D. Anderson* during the last week of February.

Congestion on Gulf Coast

On the Gulf Coast, refinery runs were sharply curtailed and gasoline production was reduced, as some plant owners reached the limits of their storage capacity. Texas Gulf Coast refineries ran to stills only 883,000 barrels of crude daily, which was 120,000 less than in the previous week, thereby using only 78.1 percent of plant capacity. Daily average gasoline production consequently was off 35,000 barrels. Nevertheless, 110,000 barrels daily went to storage. A deliberately larger cut of heavy fuel permitted addition of 10,000 barrels a day to storage, but 30,000 barrels daily of light fuel oil came out of the tanks. On the Louisiana Gulf Coast, runs to stills were 23,000 barrels a day lower and gasoline production was off 7000 daily, although 25,000 a day went into storage, along with 15,000 daily of light fuel oil and 8000 a day of heavy fuel oil.

While the East Coast scarcity drew primary attention, there were signs of trouble also in supplying the Middle West, as pipe lines and tank cars were diverted from that area to alleviate the Eastern situation. Indiana-Illinois-Kentucky plants processed 26,000 barrels per day less of crude oil than in the previous week and turned out 18,000 a day less of gasoline, and meanwhile there were withdrawals of 40,000 barrels daily of light fuel oil and 28,000 daily of heavy fuel oil from storage, although gasoline went into storage to the extent of 41,000 barrels a day.

Gasoline Demand Diminishing

Every district of the country appeared to reflect diminishing demand for gasoline, as refinery runs were cut back everywhere, while gasoline output came down in all districts except the East Coast, West Coast, and Rocky Mountain areas. For the country as a whole, runs to stills were off 214,000 barrels to 3,675,000 daily, only 3.2 percent above a year previously, and gasoline production was 63,000 barrels a day lower. Stocks of gasoline increased, nevertheless, by a normal, seasonal amount of 1,323,000 barrels and for the second successive week broke all previous records in expanding to 105,635,000 barrels, approximately 10,000,000 barrels or 10.4 percent above a year previously.

Crude Purchases Curtailed

Operators in West Texas and southeastern New Mexico fields were forced to further curb output through tightening of pipe-line proration. Atlantic Refining Company restricted purchases to 50 percent of the daily allowable effective March 1. This company was the first to cut back, having held its crude acceptances to 77½ percent of the allowable since February 10, excepting 5000 barrels daily crude contracts in the Wasson and Slaughter fields. However, these contracts are due to be amended by mutual consent. The Texas Company increased its purchase restrictions from 65 to 50 percent of the daily allowable on March 3.

Humble Oil & Refining Company, largest crude buyer in West Texas-New Mexico, has been holding its acceptances to 60 percent of allowable since February 20. Magnolia Petroleum Company adopted similar restrictions on March 1. No changes in buying policy have been announced by Gulf Refining Company, Shell Oil Company, Pasotex Pipe Line Company, Col-Tex Refining Company and Cosden Petroleum Corporation, all substantial purchasers in West Texas.

Refiners in West Central Texas are confronted with a crude surplus, and have reduced runs in some areas. Onyx Refining Company, with a plant at Hawley, cut takings one third in the newer pools. Baird Refining Company has reduced refinery throughput with a corresponding reduction in crude runs that was cushioned through the sale of 50,000 barrels of crude stocks.

Shipments of West Texas and New Mexico crudes by tank cars to Atlantic Coast refineries are not apt to materialize due to freight rate differentials. The rail tariff on West Texas crude moving to plants in vicinity of Philadelphia amounts to $2.04 per barrel, or 67 cents per barrel greater than the rate applying to movement from the East Texas field, which has been supplying train loads of crude daily to Atlantic Coast refineries since fore part of February.

Diversion of East Texas crude from pipe line to tank cars by companies that also purchase in West Texas and New Mexico indirectly benefits the latter sour oil district in that greater tanker space is then available. The low-gravity crude from the Permian Basin is preferred by refiners on Atlantic Seaboard in supplying their market for burning oils.

Atlantic Refining Company will supplement its tank car shipments of crude

Crude Oil Production in the United States

(Estimates compiled by The Oil Weekly. All figures indicate daily averages, in barrels.)

STATE OR DISTRICT	[1]OPC Allocation in March	PRODUCTION IN WEEK ENDED Feb. 28	Mar. 7
Arkansas	[2]71,500	73,400	73,900
California	[3]627,000	648,200	607,100
Long Beach	.....	38,100	34,400
Midway-Sunset	.....	45,800	49,500
Kettleman Hills	.....	27,400	27,100
Wilmington	.....	92,000	81,300
Rest of State	.....	444,900	414,800
Colorado	6,400	5,650	5,550
Illinois	362,500	333,800	336,100
Salem	.....	45,900	50,000
Louden	.....	55,700	54,800
Other New Pools	.....	220,350	219,200
Old Pools	.....	11,850	12,000
Indiana	18,000	17,050	19,200
Kansas	[2]245,800	230,000	233,100
Kentucky	12,000	12,400	12,350
Louisiana	[4]330,000	352,250	350,450
North	.....	81,200	81,400
South	.....	271,050	269,050
Michigan	249,500	50,750	50,850
Mississippi	55,600	92,100	84,950
Missouri	.....	125	125
Montana	21,000	21,750	21,650
Nebraska	5,100	4,425	4,250
New Mexico	[2]114,500	121,100	93,250
New York	14,500	12,800	12,800
Ohio	9,200	9,750	9,700
Oklahoma	[2]405,300	393,700	392,000
Oklahoma City	.....	83,450	75,750
Seminole Area	.....	101,300	102,700
Rest of State	.....	198,950	210,150
Pennsylvania	48,200	51,050	51,200
Tennessee	.....	30	30
Texas	[5]1,510,600	1,516,550	1,475,700
Upper Gulf Coast	.....	297,050	295,900
East Texas Field	.....	368,250	368,550
Rest of Eastern Texas	.....	91,650	91,050
Lower Gulf Coast	.....	126,550	122,850
Southwest Texas	.....	75,550	72,700
South Central Texas	.....	21,100	21,000
West Texas	.....	300,800	264,050
North Texas	.....	148,550	150,100
Panhandle	.....	87,050	89,500
Utah	.....	15	15
West Virginia	9,600	9,550	9,450
Wyoming	80,500	86,900	84,550
Total United States	3,996,800	4,043,345	3,928,270

[1] Production rates recommended for states by Office of Petroleum Coordinator, on Basis of Bureau of Mines forecast of the nation's daily average requirements for domestic crude during month.

[2] OPC allocation adopted by state conservation authorities as allowable production.

[3] OPC allocation also represents allowable production, the state quota being distributed among fields by Conservation Committee of California Oil Producers, acting under OPC supervision.

[4] Louisiana Department of Conservation set allowable at 346,031 barrels daily for March.

[5] Calculated daily average of actual production at beginning of month, allowing for underproduction of 3.9 percent below net allowable, which was figured at 1,536,061 barrels daily as of March 1. However, allowable normally increases as new wells are completed, and consequently, actual daily average production for month may be expected to be slightly greater than average as calculated for March 1. Under March order, most Texas fields were ordered shut down March 1, 7, 8, 14, 15, 21, 22, 30 and 31.

from the East Texas field with a substantial movement from the Rodessa field, centering upon the Texas-Louisiana border. The company is erecting rack near Jefferson, Texas, to accept deliveries from the Union Producing Company, which has contract to supply 5000 barrels daily. Heretofore, this oil has been delivered by pipe line to Atlantic in the East Texas field. Atlantic Refining Company has been averaging 7100 barrels daily for several weeks on tank-car shipments from East Texas to its refinery near Philadelphia. The rail tariff on crude oil from East Texas field is $1.37 per barrel, and $1.34 per barrel on shipments originating at Rodessa.

Gulf Refining Company has materially boosted its crude runs from the East Texas field in stepping up deliveries of oil to its Middle Western and Eastern plants by pipe line. The company has purchased 300,000 barrels of East Texas oil from Shell Oil Company to be delivered at rate of 3000 barrels daily, and has contracted to purchase 1100 barrels through July, 1942, from McMurrey Refining Company. Another contract involves 5000 barrels daily of General American Pipe Line Company until mid-August, 1942, then deliveries are to be cut to 4000 barrels daily for two-year period.

The heavy rail shipments of oils from the Southwest to the East Coast lately have consisted in substantial volume of urgently needed fuel oil for consumers that could not substitute coal, due to inability to change over equipment on short notice.

Tank-car rate on crude oil from Houston to New York City area is $1.52 a barrel and on gasoline $1.75. The $1.75 rate applies also on gasoline from Longview, Texas, to New York; and the rate from Corpus Christi to New York is $1.80.

Rail rates on crude shipped into the New York City area from other points include the following: from Wichita Falls, Fort Worth, or Dallas, Texas, $1.46 per barrel; from Ranger, Texas, $1.55; from Tulsa, $1.27; and from Oklahoma City, $1.34.

More than double the cost involved in shipping by pipe line and tanker, the expense of railway movement has become a heavy burden on oil companies with the sharp stepping up of such shipments, and authorization of an 8/10 cent a gallon raising of the ceiling on gasoline prices in the East Coast district has been requested but not yet acted upon.

The markets meanwhile reflect the above discussed situations, being generally sluggish on the Gulf Coast, tight on the East Coast, firm in the Middle West, and responsive to the increased cutting down on gasoline consumption which is being forced by the unavailability of tires and new automobiles.

Trends of Operations and Changes in Stocks

Figures are from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines' basis, except those on crude stocks, which are from Bureau of Mines weekly reports.

WEEK ENDED	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	FUEL OIL STOCKS	
					Gas Oil & Dist. Fuels	Residual Fuel Oil
1939:						
February 18	3,324,300	[6]3,125,000	271,252,000	83,075,000	23,747,000	111,349,000
April 22	3,526,700	3,280,000	277,156,000	[2]87,769,000	21,085,000	105,035,000
April 29	3,568,200	3,405,000	278,440,000	86,794,000	[7]25,844,000	[7]108,409,000
May 6	3,580,900	3,275,000	[2]278,607,000	86,216,000	26,167,000	108,597,000
August 5	[2]3,909,400	3,445,000	268,982,000	76,431,000	35,601,000	114,512,000
August 26	[1]1,600,800	3,475,000	246,982,000	73,475,000	37,722,000	[2]116,237,000
October 7	3,435,850	3,505,000	231,564,000	[6]71,152,000	38,549,000	114,397,000
October 21	3,771,550	[2]3,650,000	[3]229,127,000	72,122,000	39,358,000	115,060,000
October 28	3,498,500	3,520,000	230,453,000	72,660,000	[2]39,562,000	114,786,000
1940:						
January 6	3,584,450	[6]3,370,000	238,581,000	82,002,000	32,183,000	105,247,000
February 10	3,688,100	3,460,000	239,510,000	91,649,000	26,007,000	[6]102,344,000
March 16	[2]3,890,050	3,500,000	246,762,000	100,616,000	24,075,000	103,558,000
April 6	3,745,000	3,455,000	251,897,000	101,690,000	[6]23,551,000	105,099,000
April 20	3,858,550	3,535,000	254,881,000	[2]102,817,000	24,779,000	103,323,000
June 22	3,846,450	[2]3,690,000	260,891,000	97,276,000	32,751,000	104,683,000
September 14	3,647,400	3,580,000	262,475,000	83,300,000	46,648,000	[2]109,135,000
October 19	3,667,550	3,525,000	262,098,000	81,656,000	[2]49,051,000	108,141,000
November 9	3,584,200	3,510,000	261,631,000	[6]79,847,000	48,408,000	107,687,000
November 30	[6]3,335,050	3,510,000	262,679,000	80,284,000	46,212,000	106,618,000
1941:						
January 4	3,367,200	3,600,000	260,643,000	85,053,000	42,403,000	[2]102,448,000
January 11	[6]3,364,450	3,565,000	259,342,000	86,328,000	41,094,000	102,281,000
January 18	3,611,900	[6]3,490,000	259,934,000	87,351,000	39,920,000	101,213,000
March 29	3,746,550	3,625,000	[2]266,187,000	[2]99,727,000	29,949,000	96,152,000
April 12	3,603,650	3,630,000	265,160,000	98,654,000	[6]28,381,000	95,471,000
July 5	3,658,200	3,745,000	258,070,000	90,064,000	36,925,000	[6]92,635,000
October 4	3,860,750	4,015,000	246,144,000	[6]80,870,000	49,553,000	96,016,000
October 18	4,110,550	[4]4,120,000	243,605,000	82,584,000	52,403,000	95,800,000
November 15	4,086,850	4,010,000	[6]240,399,000	83,412,000	[2]54,983,000	95,993,000
1942:						
January 3	4,038,000	3,961,000	244,440,000	92,987,000	49,357,000	95,857,000
January 10	4,229,150	3,891,000	244,364,000	94,204,000	47,250,000	94,885,000
January 17	4,045,600	3,723,000	246,267,000	95,617,000	43,984,000	92,703,000
January 24	4,311,300	3,885,000	248,164,000	96,363,000	41,863,000	92,079,000
January 31	3,871,350	3,848,000	250,740,000	97,810,000	40,674,000	91,189,000
February 7	[4]4,336,900	3,853,000	252,366,000	100,224,000	40,038,000	90,859,000
February 14	4,078,500	3,772,000	254,463,000	101,796,000	37,512,000	89,955,000
February 21	4,077,350	3,889,000	255,861,000	104,312,000	35,698,000	88,899,000
February 28, 1942	**4,015,650**	**3,675,000**	.....	**[1]105,635,000**	**34,547,000**	**88,285,000**
February 28, 1941	3,632,250	3,561,000	[4]261,783,000	95,646,000	34,875,000	95,945,000
Amount Change:						
From Week Ago	—61,700	—214,000	[8]+1,398,000	+1,323,000	—1,151,000	—614,000
From Year Ago	+383,400	+114,000	—5,922,000	+9,989,000	—328,000	—7,660,000
Percent Change From Year Ago	+10.6	+3.2	—2.3	+10.4	—0.9	—8.0

[1] All time peak. [2] Peak for year. [3] Lowest since April, 1922. [4] Stocks, February 22, 1941.
[5] Lowest since October, 1922, due to shut down of six Mid-Continent states. [6] Lowest for year.
[7] Prior to April 29, 1939, data did not include stocks at terminals, in transit, etc., except in California.
[8] Latest weekly change.

Tanker Shortage Forces Crude Production Drop

United States crude oil production averaged 3,928,270 barrels daily in the week ended March 7. The output was 115,075 barrels a day less than in the previous week and 68,530 less than the daily average demand for domestic crude in March as estimated originally by the Bureau of Mines, although 135,570 barrels more than the revised estimate of requirements as announced at the middle of the past week by Petroleum Coordinator Ickes, in recognition of submarine interference with tanker shipments of oils from the Gulf Coast to the East Coast.

The production figures of the past week reflected the transportation difficulties, as purchasers of crude had been forced to prorate their takings even in advance of the order from the OPC suggesting emergency reductions of allowables by the state authorities. New Mexico, hard hit by the situation, produced only 93,250 barrels daily in the week of March 7, compared with 121,100 daily the previous week. Ickes has revised his recommendation for production in that state in March from 114,500 to 100,200 barrels daily. Texas last week declined about 40,000 barrels to 1,475,700 barrels daily, but the estimate of daily average demand for Texas crude has been reduced 172,000 barrels, to 1,338,600 daily, and an increase of the shut-in days for Texas fields in March from 9 to 12 is contemplated. Mississippi has no proration but production was reduced about 9000 barrels last week to 84,950 daily, and the estimate of demand has been lowered 2500 barrels to 53,100. Louisiana production declined only 1800 barrels, but demand is estimated at 314,700 barrels a day, or 15,300 less than originally. Arkansas production was up slightly, and no change was made in the originally recommended rate of 71,500 barrels daily. These changes in Southwestern states, involving an aggregate cut of 204,100 barrels in recommended daily average production, were all that were made by the OPC in the emergency order of March 4.

California Group Renews Demand for Price Increase

Only a small percentage of California oil operators have submitted data on costs as requested in questionnaires to be supplied to the United States Tariff Commission for its study of production costs for OPACS, the California Stripper Well Association reports. The association has warned that failure to submit cost data may lead to a refusal to permit an upward adjustment of crude prices due to lack of representative information.

Despite the lack of complete data, the association reports it has renewed its request for higher prices based on increasing disparity between crude prices in California and the cost of doing business as reflected in the wholesale commodity index. The index has advanced from 75 in August, 1939, to 95.3 in January, 1942, the association states, an increase of 27.1 percent. During this same period the posted price for Signal Hill 27-gravity crude, usually considered the California base, has advanced from $1.10 a barrel to $1.15 a barrel, an increase of only 4.5 percent. Parity with the price index would have required an advance to $1.40 a barrel.

U. S. Field Operations

Illinois

Wildcats in Three Counties Showing

Seaboard Oil Co.'s U. S. Coal and Coke 1, C SW SE 14-6s-4e, Franklin County, six miles west of the Rural Hill field of Hamilton County, WOC with casing on Cypress at 2836-55. On drill stem test 290 ft of fluid including 145 ft of free oil, 145 ft of oil-cut mud were recovered in 45 minutes. From an elevation of 467 Menard was topped at 2307, Tar Springs 2493, Glen Dean 2560, Barlow 2830-38 ft.

White County: Seaboard's Gates 1, SW NW SW 3-5s-9e, WOC with casing on Aux Vases at 3227-40 ft. On a 30-minute drill-stem test 150 ft of oil and 50 ft of oil-cut mud were recovered.

Carter Oil Co.'s Marlin 1, SW NW 35-6s-9e, pool opener 1½ mile south of Storms field, completed on pump with initial of 80 bbls oil and 70 bbls water daily from Bethel at 2797-2807 ft.

Clay County: Cameron Oil Co.'s Landwehr 1, NW NW NE 8-5n-7e, wildcat, drilling plug to test McClosky saturation at 2810-17.

Illinois oil operations dropped to 174 during the week ended March 3. There were 22 first reports.

COMPLETIONS

Clay County—Pure's Bayler 1, c n½ se sw 10-2n-7e, McC. 3060-80 ft, 258 bbls, 3080 ft. Rumley & Heiss' Chaney 1, c e½ ne ne 18-3n-7e, abnd 3061 ft.

Franklin County—A. W. Torbett's Isaacs 1, se nw sw se 1-6s-2e, abnd 2874 ft. Gulf's Martin 1, 20 ft n of c e½ se nw 23-5s-4e, abnd 3395 ft.

Gallatin County—Magnolia's McGuire 1, ne ne sw 19-8s-10e, Walts. 1990-2001 ft, td 2001 ft, 148 bbls.

Hamilton County—Texas Co.'s Smith 4, se se se 12-6s-5e, A.V. 3055-3105 ft, td 3330 ft, 341 bbls. Shell's Lockwood B-4, sw ne sw 13-6s-5e, A.V. 3130-76 ft, td 3385 ft, 312 bbls; Smith 5, sw ne se 13-6s-5e, L. O'H. 3218-36 ft, 3308-28 ft, td 3397 ft, 337 bbls; Crabtree B-1, c n½ ne 23-6s-5e, A.V. 3063-3101 ft, td 3328 ft, 147 bbls; Lockwood B-2, nw sw ne nw 24--6s-5e, A.V. 3083-3140 ft, td 3353 ft, 235 bbls, Texas' Hall 1, sw nw nw 18-6s-6e, A.V. 3108-47 ft, td 3318 ft, 143 bbls. Cameron Bros.' Kern 8, sw sw sw 7-6s-7e, A.V. 3031-59 ft, td 3069 ft, 175 bbls.

Jasper County — Pure's Richards 3, c w½ se sw 7-5n-10e, McC. 2825-28 ft, 2833-41 ft, 2851-58 ft, td 2868 ft, 600 bbls. Paul Johnson's Black & Ward 1, c e½ nw nw 14-5n-9e, abnd 3151 ft.

Jefferson County—E. M. Self's Zinke 4, nw sw sw nw 35-2s-1e, Beth. 1990-2006 ft, td 2006 ft, 110 bbls.

Macon County: Wildcat—Margrave & Pollock's Riley 1, sw se ne 21-15n-2e, abnd 1333 ft.

Richland County—Pure's Chapman 1, nw nw 13-4n-9e, McC. 2926-55 ft, td 2955 ft, 3,800,000 gas. Bonpas Dev. Co.'s Woods 2, c e½ se sw 21-2n-14w, McC. 3090-97 ft, td 3097 ft, 1086 bbls.

Wayne County—Gulf's Hillard 1, ne nw sw 1-1s-6e, A.V. 3095-3115 ft, td 3286 ft, 87 bbls; Shehorn B-3, 139 ft n sw sw nw 3-1s-6e, A. V. 3028-44 ft, McC. 3160-64 ft, 3172-76 ft, td 3194 ft, 288 bbls. Armstrong & Texas' Elliott-Warren's 1, c w½ sw nw 27-1s-6e, A. V. 3047-77 ft, McC. 3168-82 ft, td 3192 ft, 1085 bbls.

White County—Hinton Drlg.'s Bryant 1, c w½ se ne 26-6s-8e, abnd 3116 ft. Helmerich & Payne's Sterchi Hrs 1, c s½ sw sw 31-5n-14w, McC. 3034-55 ft, td 3062 ft, 188 bbls.

Williamson County: Wildcat — Superior's Jones 1, nw sw se 14-10s-3e, abnd 2531 ft.

OLD WELLS DEEPENED

Marion County—Magnolia's Young 31, 60 ft n of ne se nw 20-2n-2e, Tren. 4507-4608 ft, otd 3450 ft, td 4635 ft, 72 bbls.

White County—Superior's Fitton A-4, ne sw se sw 28-4s-14w, Beth. 2667-2730 ft, Av. 2824-2842 ft, otd 2827 ft, td 2842 ft, 60 bbls.

WILDCAT STARTS

Hamilton County—Reward Oil et al's Scott 1, cwp se ne 3-6s-7e, lcn. Cameron Bros.'s Johnson 2, sw ne ne 6-6s-7e, lcn. Cameron Bros.' Donley 1, c n½ ne nw 15-7s-7e, lcn.

St. Clair County—C. W. Young's Timpner 1, se ne nw 29-3s-6w, lcn.

Wayne County—Yingling et al's Ellis 1, c w½ sw ne 18-1s-5e, lcn.

White County—Starr-Brimsm's Burris 1, c sw ne 7-7s-10e, lcn.

Indiana

Osage Lime Shows Oil In Gibson County Test

First Osage lime show in Indiana was reported in a wildcat in the Hazleton area, Gibson County, Kingwood Oil Co.'s Fithan 1, E ½ SE SE 23-1n-10w, now drilling ahead at 2600 ft to test Devonian. On drill-stem of Osage at 2402-09, well flowed in 15 minutes, recovery being 1800 ft gas, 30 ft oil, 100 ft gas, 450 ft oil, 10 ft sulphur water. Only other production in that area is from the McClosky.

COMPLETIONS

Cass County: Wildcat — National Petro.'s Puhal 1, se nw se 22-28n-1w, abnd 1053 ft.

Gibson County—Roy Benoist's Dunn 1, nw se sw 24-1n-10w, McC. 1771-78 ft, 1744-47 ft, 84 bbls, td 1799 ft.

Joseph County: Wildcat — Williams & Lonzo's Hay 1, se ne sw 25-36n-1w, abnd 307 ft.

Madison County—A. W. Modert's Azimow 1, se se se 16-21n-8e, abnd 1018 ft.

Martin County—Burton & Brewer's Burris 1, nw ne nw 16-2n-4w, abnd 485 ft.

OLD WELL DEEPENED

Spencer County—I. A. Polhamus' Grass 3, ne nw ne 11-6s-4w, Barlow sd 835-58 ft, otd 730 ft, 23 bbls, td 858 ft.

FIRST REPORT

Lawrence County—Clifford Vaughn's Orland & Miller 1, c w½ se ne 24-3n-4e, lcn.

Posey County—Paul Rossi's Mauzy 1, ne nw nw 8-7s-12w, dr.

Spencer County—W. B. Burgess' Miller 1, ne ne sw sw 29-6s-6w, lcn. Vickers & Costas' Sauter 1, c n½ ne ne 32-6s-5w, lcn.

Sullivan County—E. L. Shoudy's Adams 1, nw se nw ne 18-6n-9w, lcn.

Oklahoma

Osage Well Indicates Commercial Production

Bartlesville sand pool indicated in Osage. Apache has well running tubing, another well idle. Deep test remains static.

Osage County: Norbla Oil Co.'s Osage 4, NWc NE 25-22-9e, in the Wildhorse area, found top Bartlesville 2042 ft, picked up good saturation and drilled to 2059 with hole full oil and sand continuing. Every evidence well will complete commercially.

Caddo County: Texas Co.'s edge test, Mulkahay 6, NE SE SE 2-5-12w, Apache field, is shut down after failing to find pay and will probably delimit east edge of field in Wilcox. Next completion in field will be same firm's Mulkahay 3, SW NE NE 2-5-12w, running tubing into Bromide-Wilcox section, 3775 ft, to wash in. Well 5 is drilling 3648 ft.

Near Binger, Denver Producing & Refining Co.'s Sah-Cam 1, C SE SE 33-10-10w, now below 13,800 ft, nothing showing.

COMPLETIONS

Carter County: Tussy — W. A. Delaney's Pollock 1, ne ne 8-1s-3w, broken sand 2867-2905 ft, abnd 2906 ft.

Creek County: Mercer—Sinclair Prairie's Bell 2, 80 ft s of nw sw se 29-16n-8e, Wilcox 3800 ft, td 3845 ft, pb 3812 ft, shot 10 qts, pump 20 bbls.

Grant County: Wildcat—Champlin's Crouse 1-A, c s½ se sw 29-25n-8w, Paw. 3150 ft, Oread 3865-90 ft, cored 3161-77 ft, sandy shale, Tonkawa 4565 ft, Lay. 4980 ft, Ceb. 5270 ft, Cleveland 5309 ft, Miss. 5845 ft, Wood. 6387 ft, Hunt. 6475 ft, Sylv. 6485 ft, Viola 6581-85 ft, Dense 6600 ft, Dolo. 6610 ft, Sdy. Dolo. 6645 ft, 1st Wx. 6650-61 ft, 2nd Wx. 6681 ft, abnd 6791 ft, hole full water.

Lincoln County: Wildcats—Wilcox Oil & Gas Co.'s Loy 1, nw se nw 7-14n-6e, Hogs.

Summary of Drilling Operations in the United States, Week Ended March 7, 1942

	WELLS COMPLETED						
	Completions	Oil Wells	Gas Wells	Failures	†Miscellaneous	Total 1942	Total this Date 1941
Alabama	.....	.....	.....	.....	.....	2	.....
Arkansas	7	4	.....	3	.....	26	28
California	14	11	.....	3	.....	189	219
Colorado	.....	.....	.....	.....	.....	2	2
Georgia	.....	.....	.....	.....	.....	1	.....
Illinois	26	16	1	7	2	525	547
Indiana	6	1	.....	4	1	80	87
Kansas	22	12	1	8	1	358	355
Kentucky	.....	.....	.....	.....	.....	39	52
Louisiana	31	18	.....	13	.....	238	262
Michigan	6	2	.....	4	.....	150	149
Mississippi	3	2	.....	1	.....	37	25
Missouri	.....	.....	.....	.....	.....	6	13
Montana	1	1	.....	.....	.....	30	42
Nebraska	1	.....	.....	.....	1	9	20
New Mexico	7	5	.....	2	.....	76	61
New York	22	10	.....	.....	12	256	119
Ohio	11	1	4	5	1	283	276
Oklahoma	24	6	1	12	5	376	362
Pennsylvania	64	58	6	.....	.....	702	645
Tennessee	.....	.....	.....	.....	.....	2	5
Texas	128	79	4	43	2	1,607	1,640
West Virginia	14	4	6	4	.....	156	141
Wyoming	.....	.....	.....	.....	.....	12	18
Total this week	387	230	23	109	25	5,162	5,068
Total last week	397	234	35	99	29	4,611	4,562
Total this year	5,162	3,016	417	1,182	547	.....	.....

† Includes old wells deepened, water intake, gas input, and salt water disposal wells.

2060 ft, Ccb. 2460 ft, Osw. 3235 ft, Prue 3251 ft, Verd. 3363 ft, Redfork 3610 ft, Inola 3735 ft, abnd 3860 ft. R. L. Kemp's Rhodes 1, sw sw se 28-17n-6e, Lay. 1825-1900 ft, Osw. 2676-2780 ft, Prue 2815-50 ft, Viola 3520 ft, Wx. 3595 ft, abnd 3660 ft.

Logan County: Guthrie — Sunray et al's Donoghue 8, sw se se 7-17n-1w, Wilcox 5435 ft, td 5438 ft, abnd 5060 ft.

McClain County: Byars—Patsy's Caldwell 5, 320 ft w s½ sw 15-5n-3e, Trinton 3964 ft, abnd 4035 ft.

Noble County: North Lucien—Phillips' Lydia 1, nw ne nw 36-21n-3w, Wilcox 5423-45 ft, td 5568 ft, pb 5475 ft, 438 bbls.

Okfuskee County: Gregory—Bryant's Johnson 1, sw ne se 24-10n-11e, sand 1981 ft, td 2002 ft, shot with 40 qts, 12 bbls.

Oklahoma County: Oklahoma City—Clark & Co.'s Hillman et al 1, ne c sw sw 15-11n-3w, Wilcox 6474 ft, dry 6602 ft. C. C. Peppers' 1, Block 43, 190 ft s of s½ nw 34-12n-3w, Wilcox 6460 ft, td 6540 ft, shot 220 qts, pump 404 bbls.

Okmulgee County: Beets Rapp — Wise's Field 1B, sw c nw nw 28-13n-11e, sand 3180-87 ft, abnd 3200 ft.

Okmulgee County: Morris—C. D. Burns' Hill 1A, se sw se 27-13n-14e, Base of Morris 1580 ft, td 1580 ft, repressure.

Osage County: Naval Reserve—Bay Oil Co.'s 1, nw nw sw 4-25n-6e, Arbuckle 3358 ft, dry 3418 ft.

Osage County: Quapaw—Harlan et al's 1, se se se 8-25n-11e, Oswego 1493 ft, td 1511 ft, 1000 gals acid, dry.

Osage County: Pond Creek—E. H. Jenning Bros.' 1, nw nw se 14-28n-10e, Miss. Lime 1729 ft, td 1775 ft, pb 1773 ft, 1 bbl oil & 2 bbls water.

Pittsburgh County: Unnamed—Public Service of Okla.'s Thomas 1, sw c nw nw 10-4n-16e, Hartshorne sand 1203-1350 ft, td 1400 ft, pb 1350 ft, shot 330 qts, 2,000,000 gas.

Pottawatomie County: St. Louis — Ohio's Welfelt 2, ne ne nw 34-8n-4e, Hunton 3852 ft, dry 3908 ft.

Seminole County: St. Louis — Wood Oil's Tobin 3, ne sw nw 22-7n-5e, Dolo. 4082 ft, td 4154 ft, 1500 gals acid, pump 65 bbls.

Seminole County: Wildcats — Atlantic & Deaner's Smith 1, c n½ s½ ne se 19-7n-6e, Cromwell 3280 ft, Wood. 3940 ft, Sylvan 4159 ft, Viola 4179 ft, Dense 4220 ft, Dolo. 4259 ft, 1st Wx. 4320 ft, abnd 4431 ft.

OLD WELLS DEEPENED

Caddo County: Cement—English Drlg. Co.'s Rigney 3, sw nw nw 12-5n-9w, otd 3179 ft, Sand 4480-4500 ft, td 4756 ft, perf, 25,000,000 gas.

Marshall County: Cumberland — Pure's Thomas 102, sw ne nw 28-5s-7e, otd 5162, td 5716 ft, Bromide 4560 ft, pay 4998-5018 ft, pay 5020-30 ft, pay 5036-42 ft, pay 5042-60 ft, flow 132 bbls.

Seminole County: South Earlsboro—Thompson Bros.' Anderson 1A, ne sw ne 22-9n-5e, otd 3456 ft, Earlsboro 3435 ft, pay 3451-66 ft, pay 3451-66 ft, td 3466 ft, shot 60 qts, flow 256 bbls.

Seminole County: Wildcat—Simpson Fell's Replogle 1, ne ne nw 34-10n-8e, otd 2300 ft, Cromwell 3540 ft, abnd 3554 ft.

WILDCAT STARTS

Carter County—Carter's Hernstadt 1, c ne ne 24-4s-2w, lcn.

Lincoln County—Loyd Hubbel's Criess 1, c ne sw 2-14n-6e, lcn.

Logan County—Fain & Continental et al's Ferguson 1, sw sw se 27-17n-4w, pits.

Okfuskee County—Burke-Greis et al's Camp 2, se sw nw 20-11n-9e, dr.

Payne County—E. S. Adkins et al's Borrell 1, c ne ne 33-19n-1w, dr. Mutual Oil et al's Tigner 1, ne nw nw 19-20n-4e, rig.

Stephens County—B. F. Lundy's Ledbetter 1, se nw nw se 21-1s-7w, cellar.

Kansas

Most of Week's Results Negative

Small completion in Kraft-Prusa area with majority of state tests failing to show. Other tests now are nearing critical depths. Work has slowed up in state and hearing on general picture is scheduled for March 11.

Barton County: Texon Oil & Land Co.'s Esfeld 2, CE¼ SW SW 20-16-11w, in the basal sand section, made 140 bbls daily on test. This pay is erratic, nonconformative.

Butler County: A failure, Milt Ash and Plymate et al's Hannabaum 1, NE SW SE 15-24-4e, is a completion. Test was marked as important trend wildcat between Hazlett and Potwin fields. Mississippi lime topped at 2488, dry.

Rice County: Nelson Drilling Co.'s Anderson 1, semi-wildcat, NE SE SW 25-19-6w, north of Smyers field discovery, has 7-in set 3339 ft in Mississippi chat to test. Top lime was at 3336 ft. A 160-acre south location has been staked.

Comanche County: Sinclair Prairie Oil Co.'s Exchange Bank 1, SE SW 27-33-19w, wildcat 40 miles from production and off-trend of past development, is drilling below 2600 ft. Objectives may be Viola, Simpson or Arbuckle.

Barber County: Champlin Refining Co.'s Hildebrand 1, CE¼ NE NW 26-32-15w, 12-mi southwest Lake City field, made only slight show in Mississippi after acid to condemn Arbuckle, Viola, Simpson and Mississippi. Kansas City-Lansing remains an untested section.

COMPLETIONS

Barber County: Wildcat—Luther Mackall's Hoss 1, c n½ nw nw 12-30s-15w, base Florence 2360 ft, Topeka 3110 ft, Heebner 3695 ft, Lansing 3920 ft, Simpson shale 4512 ft, Simpson sand 4558 ft, Arbuckle 4607 ft, abnd 4661 ft.

Barton County: Ainsworth—Lauck & Moncrief's Morrison 1, c w½ sw nw 27-16n-13w, conglomerate 3433 ft, abnd 3459 ft.

Cowley County: Gueda Springs — E. B. Shawver's Dunlap 2, sw se nw 8-34s-3e, Miss. chat 3308 ft, pay 3340-47 ft, td 3347 ft, swab 25 bbls.

Cowley County: Gibson — Sinclair Prairie's Robertson 1, se sw se 20-34s-3e, Bartlesville 3386 ft, td 3388 ft, shot 40 qts, 80 qts, pump 184 bbls.

Greenwood County: Reece—Katz' Live D-2, sw ne nw sw 13-26s-9e, Miss. 2082 ft, td 2185 ft, pb 2105 ft, 1000 gals acid, pump 25 bbls.

Jefferson County: McLouth—E. V. Jackson's Shrader 1, nw ne 31-9s-20e, Miss. 1604 ft, abnd 1627 ft.

Kearney County: Patterson — Stanolind's Patterson 2, top Miss. 4895 ft, abnd 4954 ft.

Kingman County: Cunningham — Skelly's Conley 4 csl sw, 20-27s-10w, Arbuckle 4147 ft, td 4230 ft, perf csg, 7500 gals acid, 16,900,000 gas.

Leavenworth County: Wildcats—E. V. Jackson's Shughart 1, c sw sw 6-9s-20e, Oread 125 ft, base Hertha 758 ft, Bartlesville 1467-70 ft, bail little free oil, Miss. 1521 ft, base Miss. 1870 ft, Hunton 1955 ft, abnd 2007 ft. Roxana's Fisher 1, c n½ se ne 19-11s-22e, B. Hertha 345 ft, Miss. 1060 ft, base Miss. 1446 ft, Hunton 1490 ft, Viola 1550 ft, abnd 1630 ft.

Marion County: Lost Springs—Veeder Supply's Williams 1, c n½ nw sw 35-17s-4e, Miss. lime 2337 ft, td 2382 ft, pump 50 bbls. Ring-Mac Oil's Henke 1, c w½ nw ne 4-18-4e, Miss. Lime 2374 ft, td 2408 ft, pump 225 bbls.

McPherson County: Wildcat—N. Appleman et al's Regehr 1, se se sw 21-21s-4w, Lansing 2630 ft, stain 2691-97 ft, Miss. 3305, Base Miss. 3580 ft, Sylvan 3690 ft, Viola 3841 ft, Simpson 3861 ft, Arbuckle 3940 ft, abnd 3960 ft.

Pawnee County: Pawnee Rock—Amerada & Texon's Smith B-2, c n½ nw ne 13-20s-16w, Arb. 3747 ft, td 3823 ft, perf 700 gals acid, 3000 bbls.

Phillips County: Ray—Barnett Drlg. et al's Ray "B" 2, ne nw nw 32-5s-20w, Reagan 3571 ft, td 3576 ft, potential 3000 bbls.

Pratt County: Cunningham—Sinclair Prairie's Greider 4, sw nw ne 35-27s-11w, Lansing 3458 ft, td 3512 ft, 12,500 gals acid, pump 658 bbls.

Pratt County: Wildcat—Falcon-Seaboard et al's Lemon 1, nw ne nw 32-27s-14w, Anhy. 877 ft, Lansing 3975 ft, Miss. 4440 ft, sand 4528-40 ft, Viola 4553 ft, Simpson 4614 ft, Arbuckle 4712 ft, cored 4715-25, abnd 4765 ft.

Reno County: N. E. Peace Creek—Leader's Tonn 3, sw se sw 11-23s-10w, Viola 3758½ ft, td 3764½ ft, 500 gals acid, 3000 bbls.

Rice County: Raymond—Stornfeldt & Hyde's Rick 1, c w½ sw se 17-20s-10w, Lansing 3058 ft, pay 3119-3127 ft, td 3127 ft, potential 3000 bbls.

Russell County: Anschulz — Isern Bros.' Schultz 4, c n½ sw ne 16-15s-13w, Lansing 3050 ft, td 3335 ft, pb 3255 ft, 6000 gals acid, pump 848 bbls.

Russell County: Trapp—E. J. Carey et al's Hill 1, c w½ nw ne 20-15s-13w, Lansing 3066 ft, td 3350 ft, perf, pump 304 bbls.

Stafford County: Zenith—Stanolind's Ferris "A" 7, c e½ sw se 15-24s-11w, Misener 3796 ft, td 3830 ft, 5000 gals acid, pump 231 bbls.

OLD WELL DEEPENED

Rooks County: Westhusin—Leavell's Baxa 1, sw sw nw 12-9s-17w, otd 3255 ft, Kansas City 3146 ft, pay 3312-3318 ft, td 3318 ft, 3000 gals acid, pump 575 bbls.

WILDCAT START

Jackson County—L. B. Rogers et al's Lincoln Liberty Life 1, ne se 23-5s-16e, rur.

Nebraska

OLD WELL DEEPENED

Richardson County: Falls City—Ohio's Sandrock 6, c w½ w½ ne se 20-1n-16e, otd 2260 ft, Hunton 2248 ft, td 2320 ft, pb 2300 ft, 1500 gals acid, pump 69 bbls oil and 1317 bbls water in 40 hrs.

West Texas

Slaughter Acreage Deal Involves Drill Campaign

Two trades involving acreage in north portion Slaughter field with 27 producing offsets given court approval. Barnhart pool extension makes good flow, although structurally low. West flank of Abell field records first failure.

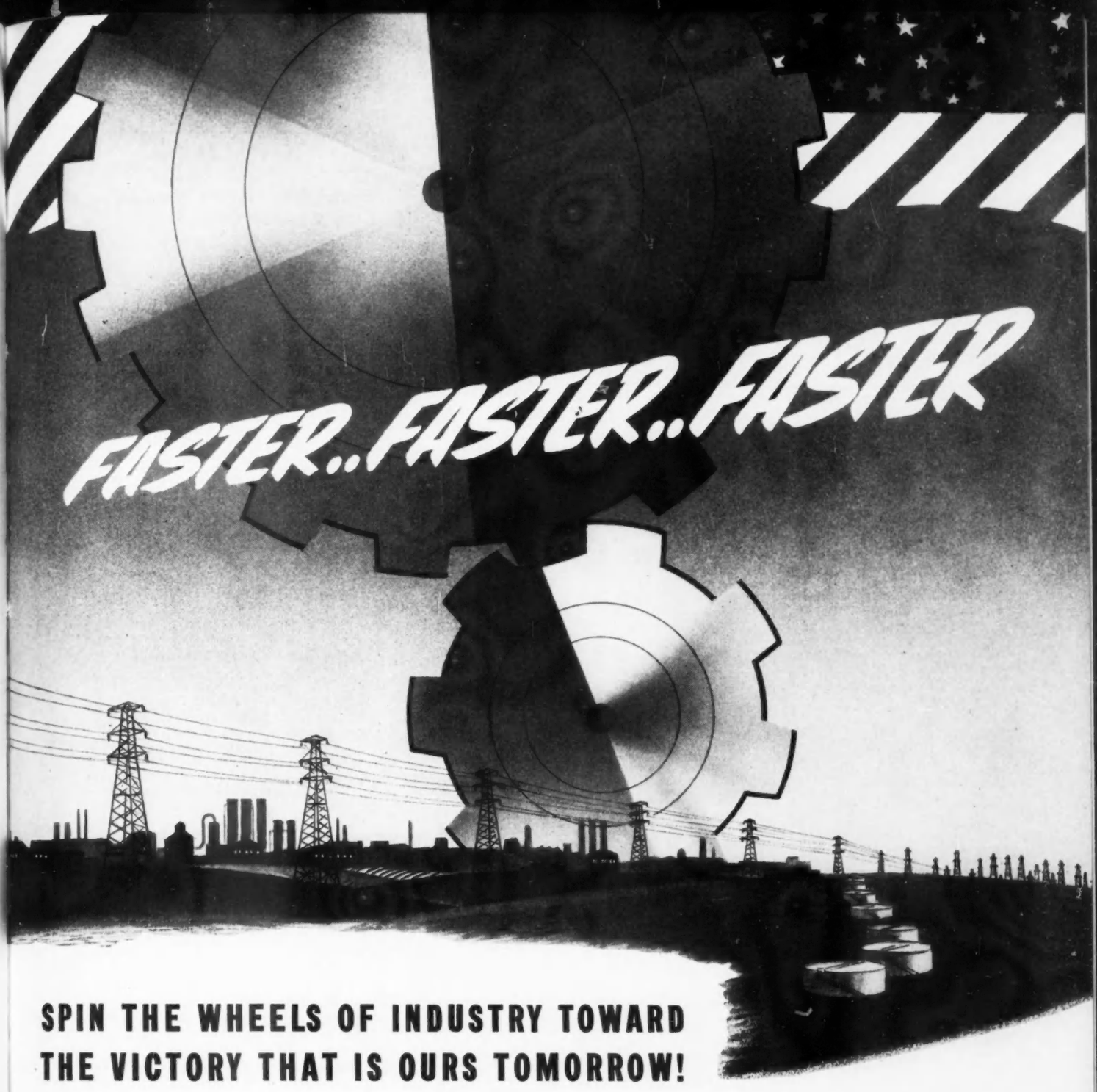
Slaughter: Continuous drilling obligations assumed by operators acquiring leases on unexplored sector of Mallet ranch. T. F. Morrow et al awarded lease on east 3/5 of League 48, Edwards County School Lands, embracing 2500 acres, with 13 completed wells to offset. Morrow et al will pay ⅜ royalty, and operate 2 rigs continuously, provided tests approved by OPM. Jerry C. Hawkins et al have 14 producing offsets in being awarded lease on 6 Labors in League 48, and 23 Labors in League 47, Edwards County School Lands, with a deep test obligated for the latter. Hawkins et al also given lease on 22 Labors, League 46, with an exploratory test to start within 90 days. Hawkins et al to operate three rigs in developing the acreage, and pay bonus of $1000 cash per location, besides royalty of ⅜ of gross production. Sam C. Arnett, receiver, was over-ruled by district court order in awarding the leases last December, but the Seventh Court of Civil Appeals reversed the decision.

Lamb County: Stanolind made location for Hopping 1, C SE SW Sec 25, Blk T, T. A. Thomason Survey, ½-mile southeast Fieldton, for an 8500-ft test on its 21,000-acre block in east central part county. Located on geophysical prospect and north of deep-seated granite ridge.

Lubbock County: J. R. Sharp et al's Holman 1, 2½ miles south of county's lone producer, drilling 4650 ft, and Stanolind's Stinnett 1, 6 miles southeast of the producer, was drilling at 3010 ft.

Abell: Sinclair Prairie's Heierman 3, NEc H&TC 12, Blk 3, abandoned in Ellenberger 5999 ft, being the first failure for west portion field.

Reagan County: Amerada's University 1-R-D, 1⅜ miles east by south of Barnhart pool discovery, attained producing depth record for district in flowing 465 bbls 45-gr oil in 19 hours, gas-oil ratio 1744/1, on ½-in choke after 5000 gallons acid through perforations at 9080-9155 ft in Ellenberger, topped 9038 ft, elev 2698 ft. Casing pressure during gauge rose from 400 to 1050 pounds and tubing from 550 to 650 pounds. This third producer for area is 148 ft low to discovery on Ellenberger. Company is drilling west and



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southeast outposts, and made location for University 1-R-F, ½-mile southeast latest completion.

Andrews County: Fullerton Oil Co.'s Wilson 1, Clear Fork wildcat strike made early in February, flowed 682 bbls 43-ga oil, gas-oil ratio 697/1, on official 24-hour gauge through ½-in first 3 hours and 1-in choke 21 hours; used total 9500 gallons acid through perf 7045-7275 ft. Production from Clear Fork saturation 7222-7324 ft, and well plugged back from 8005 to 7280 ft, elev 3382 ft. This discovery has offsets drilling to north and west and a third test ½-mile west by south. It caused a big lease campaign in the west half of both Andrews and Gaines Counties. Texas Pacific and Seaboard's Midland 1-D, third test on geophysical prospect in southeastern Andrews County, drilling 4720 ft with cable tools, and first saturation due near 4800-ft level.

Ector County: Clifford Mooers et al's Slater 1, southwest outpost for Goldsmith field, flowed 303 bbls fluid daily, 70 percent oil and balance water, after re-acidizing with 1000 gallons at 4222-65 ft, having plugged back from 4268 ft.

COMPLETIONS

Andrews County: West Fuhrman—Fuhrman Pet. Corp.'s Thornberry 1, swc PSL 23, blk A-42, 4555 ft se prod, elev 3220 ft, 146 bbls on gas-lift ¾-in, shot 557 qts nitro 4270-4540 ft.

Cochran County: Slaughter—Devonian Oil Co.'s Duggan 12-B, nec lab 19, leag 55, Oldham CSL, 1031 bbls 2½-in, acid 12,500 gals 5022-72 ft. Honolulu Oil Corp.'s Dean 4, 3840 ft from s, 440 ft from e leag 58, Martin CSL, 980 bbls 2½-in, acid 10,000 gals 4040-5035 ft. Magnolia's Mallet 11-A, sec lab 6, leag 50, Scurry CSL, 1140 bbls cas, acid 10,500 gals, td 5032 ft; Mallet 15-A, sec lab 15, leag 50, flow 1563 bbls cas, acid 10,500 gals 4980-5052 ft; Mallet 20-A, lab 15, leag 50, flow 1164 bbls cas, acid 10,500 gals 4980-5040 ft.

Ector County: Wildcat—Oil Well Drlg. Co.'s Johnson-Shell 1, nwc T&P 48, blk 44, T-1-S, elev 3064 ft, anhydrite 1520 ft, Yates sand 2720 ft, lime 3870 ft, flow 20 bbls 33-gr, ½-in, 40 qts nitro shot 4275-4353 ft, 4000 gals acid, td 4510 ft, pb to 4353 ft.

Ector County: Foster—Forest Dev. Corp.'s Moss 12-A, c sw se T&P 42, blk 42, T-2-S, abnd 4450 ft.

Ector County: North Cowden — Sinclair Prairie's Johnson 36-D, 440 ft out sec T&P 36, blk 43, T-1-S, abnd 4262 ft. Stanolind's Smith 24-G, nw se se T&P 12, blk 43, T-1-S, pump 308 bbls, shot 445 qts 4200-4350 ft, td 4360 ft. Texas Co.'s Holt 21, c se nw T&P 11, blk 43, T1-N, pump 387 bbls, shot 480 qts 4450-4750 ft.

Fisher County: McCaulley—Masters Oil Co.'s Fancher 1, c se se HT&B 55, blk 1, pump 15 bbls oil 45 bbls w, acid 5000 gals, perf 3350-57 ft, td 3391 ft; L. A. Long et al's Maberry 1, c sw nw HT&B 56, blk 1, elev 1922 ft, top lime 2995 ft, jkd 4153 ft.

Gaines County: Cedar Lake — Stanolind's American Warehouse 12, c ne se D&W 5, blk H, swab 624 bbls, shot 720 qts 4605-4745 ft.

Gaines County: Seminole—Humble & T. P. Coal & Oil Co.'s Blakemore 8-B, c ne nw WT 232, blk G, 495 bbls, ½-in, 5112-5325 ft.

Hockley County: Slaughter — Honolulu's Mallet 20-B, nec lab 10, leag 50, Scurry CSL, flow 834 bbls 2½-in, acid 10,000 gals 4970-5030 ft; Mallet 24-B, sec lab 11, leag 50, flow 1337 bbls 2½-in, acid 10,000 gals, 4955-5035 ft; Mallet 29-B, nec lab 5, leag 52, Scurry CSL, flow 1142 bbls 2½-in, acid 10,000 gals 4990-5027 ft; Slaughter 10-A, swc lab 5, leag 40, Maverick CSL, flow 1348 bbls 2½-in, acid 10,000 gals 4911-70 ft; Slaughter 28-B, swc lab 50, leag 37, Zavalla CSL, flow 1294 bbls 2½-in, acid 10,000 gals 4918-5017 ft. Magnolia's Mallet 8-B, lab 7, leag 50, Scurry CSL, flow 1692 bbls cas, acid 10,500 gals, td 5015 ft; Owens 3, nwc lab 87, leag 38, Maverick CSL, flow 1629 bbls cas, acid 10,500 gals, td 5030 ft. Texas Co.'s Hudgens 2, nec PSL 8, blk X, flow 525 bbls oil, plus 6% bs&w, acid 10,500 gals 4982-5011 ft, td 5035 ft; Mallet 5-C, nec lab 12, leag 51, Scurry CSL, flow 621 bbls, acid 4500 gals 5012-33 ft; Mallet 3-F, nec lab 14, leag 51, Scurry CSL, flow 2087 bbls eas, acid 11,000 gals 5026-61 ft; Slaughter 100, nwc lab 74, leag 38, Zavalla CSL, flow 1736 bbls cas, acid 14,000 gals 4970-5023 ft; Slaughter 104, sec lab 72, leag 38, flow 1824 bbls, acid 12,000 gals 4925-5025 ft; Slaughter 105, sec lab 74, leag 38, flow 1355 bbls, acid 10,500 gals, 4975-5030 ft; Slaughter 111, swc lab 78, flow 1475 bbls cas, acid 12,000 gals 4950-5023 ft. T. P. Coal & Oil Co.'s Graham 3, nec lab 38, leag 40, Maverick CSL, flow 369 bbls 3-in, acid 10,000 gals 4914-59 ft.

Pecos County: Abell—Geo. Abell et al's Fuchs 1, 330 ft from ne and 2310 ft from se lines H&TC 5, blk 3, 1386 bbls natural ½-in, McKee sand 5173-83 ft. Magnolia's Baldwin-State 3, center lot 3, H&GN 24, blk 9, flow 140 bbls, ½-in 5796-5805 ft; Gerety 2, center lot 13, H&GN 23, blk 9, flow 821 bbls ½-in, McKee sand 5331-39 ft; State-Sullivan 5, 1650 ft from ne & 990 ft from nw H&GN 10, blk 3, flow 681 bbls, ½-in, 5952-61 ft. Sinclair Prairie's Silverman 2, 2310 ft from se and sw lines H&TC 10, blk 3, flow 1600 bbls ½-in, perf 5375-90 ft, td 5423 ft.

Pecos County: Walker—Cardinal Oil Co.'s White-Baker 6-J, nw sw sw GC&SF 87, blk 194, flow 102 bbls 1-in, shot 60 qts 2140-55 ft, td 2160 ft.

Pecos County: Wildcat—Magnolia's Price 1, sec n½ H&GN 4, blk 12, elev 2313 ft, Green shale 4735 ft, Ellenburger 5200 ft, abnd 5506 ft.

Winkler County: Emperor—C. V. Lyman et al's Cowden-Humble 1, c sw se PSL 39, blk B-5, flow 486 bbls 2-in, shot 360 qts 2570-2979 ft, td 3039 ft.

Terrell County: Wildcat—Skelly's Roberts 1, c ne ne MK&T 190, blk D, elev 2774 ft, abnd 3940 ft in Metamorphosed sand and shale.

Winkler County: Keystone—Sid Richardson & P. R. Bass' Jenkins 3-A, swc ne PSL 12, blk 77, flow 292 bbls 1-in, shot 400 qts 3335-3463 ft, td 3475 ft; Jenkins-Southland 5, sec nw PSL 13, blk 77, flow 315 bbls 2-in, shot 440 qts 3320-3461 ft, td 3491 ft.

Winkler County: Weiner—Ralph Lowe et al's Brown-Altman (Humble) 1, sw se sw PSL 24, blk B-5, flow 184 bbls cas, shot 540 qts 3050-3180 ft, td 3212 ft, pb to 3187 ft.

Yoakum County: Wasson—American Liberty & Atlantic's Carpenter-Texaco 2, c e½ ne se sec 733, flow 1119 bbls cas, acid 10,000 gals 5046-5180 ft. Olivia Oil Corp.'s Stanford-Humble 4-B, nwc ne sec 792, flow 71 bbls, plus 5.3% water ½-in, acid 10,000 gals 5000-5291 ft.

WILDCAT START

Yoakum County—Rowan Drlg. Co. and Joe C. Maxwell's Field 1, c ne ne sec 46, J. H. Gibson sur, blk D, lcn 5500-ft test.

WEST CENTRAL TEXAS

COMPLETIONS

Brown County—J. C. Hamer et al's W. Lawson 1, nw ne ne BBB&C 32, pump 8 bbls, shot 10 qts, 755-64 ft.

Brown County: Wildcat—Guyle Greynolds et al's Boatman 1, 932 ft from n and 1398 ft from e BBB&C 25, Bend 2440 ft, Marble Falls 2918 ft, pumped 7 bbls, shot 60 qts 2940-64 ft, td 2983 ft.

Callahan County—Wm. D. Austin et al's Yarbrough 1-B, nw ne nw TE&L 2971, abnd 556 ft.

Jones County: Wildcats—Butler-Horne Drlg. Co. et al's Murfee 1, 660 ft n and w of swc Ed Dickinson sur in Jones Boston sur 276, elev 1814 ft, abnd 3205 ft. Carl S. Shoults et al's Alston 1, c w½ sw se H&TC 7, blk 3, elev 1485 ft, Palo Pinto 3200 ft, abnd 3305 ft. Ungren-Frazier et al's Cox-Hamilton 1-A, 986 ft from n and 467 ft from e H&TC 20, blk 4, elev 1526 ft, abnd 3418 ft.

Jones County — Lester & Duffield-Clark-Cowden Drlg. Corp.'s McCormick 1, nw ne ne T&P 23, blk 17, 427 bbls ¾-in, sand 2221-25 ft. T. L. Wheeler & Daniels' Willmon 1, swc of east 53-ac n½ of w½ T&P 33, blk 15, abnd 2100 ft.

Parker County: Wildcat—Oscar Donley et al's Lasater 1, 990 ft out nec of F. Blodgett sur A-87, 2 mi w Aledo, abnd 803 ft.

Shackelford County—Jones-Stasney-Groover & Rose's Gresham 1, c nw se B. A. L. sec 7, elev 1369 ft, Bend 3600 ft, abnd 3915 ft. W. R. Seeds et al's Snyder 1, nw se se L. A. L. sec 26, abnd 437 ft.

Taylor County: Wildcat—Wm. and Carroll Snoddy et al's Tipton 1, 330 ft out sec w½ of north 400 ac T&P 20, blk 18, elev 1846 ft, Saddle Creek 2696 ft, flow 518 bbls 2-in, acid 2000 gals 2745-71 ft.

WILDCAT STARTS

Jones County—Ungren-Frazier et al's J. M. Radford 1, nw se ne T&P 20, blk 16, lcn.

Mills County—T. J. Huptutler et al's Fred Whittenburg 1, 347-ac tr, John Norman sur 613, 8 mi nw Lometa, elev 1260 ft, lcn for Ellenburger test.

TEXAS PANHANDLE

COMPLETIONS

Gray County—Gulf's Faulkner 19-A, lse B, H&GN 27, blk B-2, pump 280 bbls 42.4-gr, nitro shot, td 2930 ft. The Texas Co.'s Chapman 9-B, H&GN 49, blk A-9, pump 138 bbls, shot 300 qts 2690-2770 ft; G. H. Saunders 38, swc nw H&GN 12, blk A-6, pump 206 bbls, shot 220 qts 2849-2921 ft.

Moore County—Phillips' Loula (Nelson) 1, nwc se T&NO 208, blk 3-T, elev 3446 ft, 24,500,000 gas, 330 lbs pressure, acid 5000 gals, td 3090 ft.

Potter County—U. S. Bureau of Mines' Bivins 4-A, se nw sw BS&F 22, blk 6, Helium field, 7,950,000 gas, 700 lbs pressure, sandy lime 3390-3680 ft, td 3692 ft.

North Texas

Good Flow From Bend in Clay County Discovery

Clay County discovery in Bend makes prolific natural flow. Three offsets assigned deep strike in Southeastern Wilbarger County. Wildcat operations represents large percentage of revived activity noted the past two weeks after lull during first two months of year. Deep production in Ringgold pool extended to Strawn sector of Worsham ranch. Archer County wildcat shows oil with water.

Clay County: Continental Oil Co. and Roy Lee, trustee's Watson 1, 1¾ miles north of Antelope multi-pay pool, flowed 118 bbls in 3 hours then 88 bbls next 3 hours on ½-in tubing choke for potential rating 704 bbls. Working pressure on casing from 650 to 460 pounds and tubing pressure dropped from 380 to 235 pounds. Production from saturation at 5460-84 ft in Lower Bend, topped at 5198 ft, being 277 ft low to single Bend producer, situated 2½ miles south by west in Antelope pool. Partnership starting ¼ mile east offset, and Roy Lee, trustee, to drill on 175-acre lease, adjoining discovery tract on east.

Wilbarger County: Three offsets authorized by Consolidated Oil Co. to its Potts 1-D, discovery that flowed 155.82 bbls 43-gr oil, gas-oil ratio 543/1, on official 3-hour gauge ¾-in choke. Production from Mississippian, topped 4493 ft, with broken saturation 4508-36 ft, and also Ellenburger dolomite penetrated 1 foot to 4539 ft. Situated 2 miles south by east nearest Ellenburger production in Consolidated pool, and first well in general area to produce from Mississippi, although discovery company's Barnes 2-B, west portion of K-M-A field's Strawn zone, logged top of Mississippi at 4593 ft, being 115 ft low to new strike, and abandoned in water at 4628 ft.

Worsham Structure: Gulf's Worsham-Spring 6, west offset to Strawn production in eastern Clay County and ⅞ mile northwest of nearest Bend producer, flowed 215 bbls by heads 18 hours from saturation 5482-5540 ft in Bend, topped 166 ft high. Well is to be deepened, then acidized with large potential in prospect. It is now evident that the Bend oil zone, originating in the Ringgold area to the east, will embrace considerable territory.

Grayson County: Robt. Tolbert and Finston's Jewell 1, seismograph prospect west of Hagerman, drilling lime and shale 7850 ft in Simpson, topped at 7613 ft. Sinclair Prairie's Wheeler 1, 1½ miles southwest of Collinsville, yielded small show oil with salt water on initial swabbing at 3755 ft after plugging back from Ellenburger 3947-4514 ft.

Archer County: Sinclair Prairie's Coleman 1, wildcat 3¾ miles northeast Scotland deep pool, yielded 3 bbls oil and 90 bbls salt water in bailing to 4628 ft, having plugged back from Ellenburger 5879-92 ft to complete in Bend, topped at 5292 ft. Water believed to be from faulty plug. Same company's Sloop 1, 1¼ miles southeast Vogtsberger pool, was unloading mud for production test, 7-in 4641 ft, bottomed in Bend 5200-5491 ft. Continental's Ferguson 1, midway between Hull-Silk and K-M-A fields, tested water at 4550 ft in Bend, topped

at 4468 ft, and then plugged back to 4495 ft. This wildcat proved dry in Ellenburger at 5073-5270 ft.

COMPLETIONS

Archer County: Griffin-Kadane—Roy Lee, Tr's Heden 1, swc n½ se Palo Pinto CSL 14, pump 173 bbls oil, 78 bbls water, Strawn 4347-70 ft.

Archer County: Wildcat — W. C. Young-Kimbell & Bohner's Roberson 1, nwc sec 14, J. W. Harris subdiv, abnd 1456 ft.

Clay County: Wildcats — Continental and Roy Lee, tr's Watson 1, 3095 ft fr e and 330 ft fr n of W. A. Farris sur, Bend 5198 ft, flow 704 bbls natural ½-in, Bend saturation 5460-84 ft. W. A. Spradling et al's Sunday 1, 375 ft fr w and 510 ft fr s lines 201.4-ac tr, A. McGown (A-319) and J. O. Butler sur A-36, abnd 1136 ft. Ben Grimes et al's Alcorn 7, 500 ft fr n and 540 ft fr w blk 27, Parker CSL, pump 1½ bbls, sand 149-161 ft.

Cooke County: Wildcats — Panhandle's Welch 1, 660 ft out nwc M. W. Ross sur A-553, abnd 1932 ft. S. W. Simms et al's Dayton 1, 2950 ft fr e and 330 ft fr s 246-ac tr, F. Godley sur A-293, top Ellenberger 1861 ft, abnd 1944 ft.

Denton County: Wildcat—Hunt Oil Co.'s Forrester 1, 2400 ft fr s and 1700 ft fr w lines W. Nelson sur A-963, abnd Schist 2520 ft.

Jack County: Wildcat—Joe A. Worsham et al's Sewell 1, 2600 ft fr e and 4600 ft fr s lines Daniel Crenshaw sur A-128, top Bend 4677 ft, 155 bbls 44-gr oil natural ½-in, Bend saturation 4691-4716 ft.

Wichita County—L. A. Prince et al's Warren 6, DR&K sur A-714, abnd 1316 ft.

Wilbarger County: Wildcat — Consolidated Oil Co.'s Potts 1-D-E, 3910 ft fr s and 3300 ft fr e lines H&TC 4, blk 7, 2 mi s Consolidated pool, 1247 bbls natural 43-gr ¾-in, K-M-A lime 3878 ft, Bend 4094 ft, Mississippian 4493 ft, Ellenberger 4538 ft, elev 1133 ft, broken pay 4508-39 ft.

Wise County: Wildcat — Hunt Oil Co.'s Stack-Pure 1, Adam Johnson sur A-1330, Chico area, base Palo Pinto 1093 ft, Bend 5210 ft, Barnett shale 6315-6887 ft, Simpson 6887 ft, abnd Ellenberger 6940-7003 ft.

Young County: Wildcat—FHE Oil Co.-Fleming-Kimbell Corp.'s Graham 1, swc ne TE&L 2912, Palo Pinto 1847 ft, Bend 3778 ft, Marble Falls 4260 ft, Mississippi 4626 ft, Ellenberger 4796 ft, abnd 4927 ft.

WILDCAT STARTS

Archer County—W. C. Young-Kimbell & Bohner's Abercrombie 1, 1470 ft from n and 1170 ft from e lines sec 109, J. W. Harris Club Ranch subdiv, lcn. W. R. Stafford et al's Richardson-Texaco 2, 847 ft from n and 330 ft from w lines W. C. McCune sur A-943, lcn.

Clay County—Bridwell Oil Co.'s Edrington 19-A, 660 ft from se and sw lines 320-ac tr, nw part BBB&C sec 24, A-898, lcn. F. H. Gohlke et al's Byers 2, 990 ft out sec blk 30, Byers subdiv, lcn. Wilder Drilling Co.'s Dunn 1, 330 ft from n and 990 ft from w lines blk 24, Byers subdiv, lcn.

Cooke County—Panhandle Ref. Co.'s R. W. Trew 1, 660 ft out sec H. Whitesides sur A-1083, lcn.

Denton County—H. M. Reed Gas Co.'s C. Waide 1, 865 ft out swc east 114¾-ac tr, J. Chism sur, A-278, dr 1470 ft.

Young County—C. V. Welch et al's A. A. Donnell 1, 1980 ft out sec S. P. Ry sec 2, A-1726, lcn 3400-ft test.

East Texas

Hawkins Extension Beyond Failure

Hawkins field expanded northeast and beyond deep failure. Wildcat failure in Freestone County. Two Trinity prospects pending for Wood County.

Hawkins Field: S. H. Killingsworth et al's Green 2, twin test to a 5100-ft failure, extended production northeast with flow 80 to 90 bbls daily by heads from Woodbine perf 4860-75 ft, elev 390 ft. Humble's Slaughter 3-B, Esparcia survey and west edge of gas-cap, tested dry gas through Woodbine perf 4522-57 ft, and company's Republic 4, inside location, missed oil zone due to fault, and abandoned 4579 ft in Georgetown.

Wood County: Amerada is credited with having authorized a projected Paluxy test for its block in north end of country and north of its 6506-ft Paluxy failure. Shell has been weighing contractors' bids for several wells on a proposed Lower Trinity test for its block centering 5 miles northwest of Quitman.

COMPLETIONS

Anderson County: Wildcat—K. R. Voelkel and Wright Drl. Co.'s Rogers 1, 1900 ft fr sw and 1500 ft fr se lines 300-ac lse, Wm. Greenwood sur, elev 241 ft, Pecan 3952-4295 ft, Austin 4985-5260 ft, broken to 5305 ft, Woodbine 5482 ft, abnd 5590 ft.

Camp County: Pittsburgh—Harry S. Moss et al's Venters 1-A, 1537 ft fr s and 2050 ft fr n lines R. Wyres sur, flow 116½ bbls natural, various chokes, Travis Peak perforations 7970-8056 ft, td 8111 ft.

Cherokee County: Wildcat—John G. Mayo and H. R. Burden's New Birmingham 1, 660 ft out se c 70-ac tr B. Newton sur, elev 379 ft, Pecan 3433-3784 ft, top Austin 4280 ft, top Woodbine 4486 ft, abnd 4510 ft.

Smith County: Chapel Hill — Sinclair Prairie's Walton 1, 441 ft fr n and 1080 ft fr e lse, S. Box sur, dual well, flow 273 bbls 42.5-gr oil ¼-in natural, gas/oil ratio 1030/1, Pettit perf 8052-8229 ft; flow 230 bbls 74-gr distillate, gas/oil ratio 19,000/1, ⅜-in, Paluxy perf 5746-5818 ft, td 8292 ft.

Upshur County: Wildcat—A. H. Carpenter et al's White 1, 1154 ft fr sw and 690 ft fr e lines 80-46-ac lse, John Carson sur, elev 394 ft, Pecan 3400-3545 ft, Austin 4722-4813 ft, Woodbine 5005 ft, abnd 5571 ft.

Wood County: Hawkins—Humble's Atkins 7, 1400 ft out swc 341.44-ac lse, J. P. Moseley sur, 409 bbls ¼-in, Woodbine perf 4757-64 ft, td 4864 ft; Republic 4, 467 ft fr n and 1780 ft fr w lines 113.22-ac tr, H. E. Watson sur, elev 411 ft, Woodbine 4134 ft, Georgetown 4520 ft, abnd 4579 ft.

WILDCAT STARTS

Anderson County—Magnolia's W. C. Campbell 1, 660 ft out of swc 90.31-ac tr, Jesse B. McNealy League, 3½ mi ne Montalba, mim 6000-ft test.

Bowie County—A. L. Willis et al's L. L. Chapman 1, 282-ac tr, Ed H. Tarrant sur, lcn.

Morris County—D. V. Davis et al's Sheppard 1, 3000 ft from e and 5375 ft from s lines BBB&C 319, 8 mi n by w Naples, lcn.

Navarro County—John Hoosier et al's Black 1, 800 ft from se and 150 ft from ne lines tr and B. G. Balthrope sur, lcn.

Smith County—Herbert M. Ogg et al's McClung 1, 204.92-ac tr Nancy Sumpter sur, 1½ mi sw Tyler, rig.

Southwest Texas

Leasing and Farmout Deals Foretell Wildcat Campaign

Further expansion of wildcatting is foreseen as an increased lease program and farmout campaign is affecting the entire Southwest Texas region. Sparta-Wilcox, especially, is to be explored and developed as new reserves are being uncovered.

Colorado County: Shell's Plow Realty Co. 5, 6000 ft se Sheridan field, set cas above 11,500-ft contract and testing.

Dewitt County: Atlantic Refining Co. has applied for priorities to drill 12,000-ft or deeper Wilcox well at Thomaston. Would go at least 4000 ft into formation.

Frio County: Wiegand Bros.' Gilliam 1-A, on Pearsall townsite prospect, dropped to 10 bbls day and will acidize.

Jackson County: Gulf's Simons 1, 8000 ft sw Texana field, ran electric log 7803 ft, and is running cas to test oil sand at 7615 ft.

Jim Wells County: Magnolia's Seeligson 28, one mi n Seeligson field, pb fr 7461 ft, perf at 6081-83 ft and is completing to extend field.

Starr County: Sun's Garcia et al 1-A, 3½ mi sw Yturria field, logged oil sand at 3740-68 ft, sw and oil sd 3768-3806 ft, crooked hole 4075 ft, sidetracked, drilling near sand in new hole.

LOWER GULF COAST

COMPLETIONS

Jackson County: Francitas—Francitas Gas Co.'s Broughton 6, lot 46, Newell sur, 65,000 mcf gas, spray 56-gr condensate, perf 7454-57 ft, td 8282 ft.

Jackson County: Ganado—Humble's Branch 1, sur 2, sw outpost, flow 156 bbls 37.9-gr oil ⅛-in ch 980 lbs tp, 1060 lbs cp, gas/oil ratio 560/1, sand 6440 ft, td 6449 ft. Texas' ML & I Co. 8, sec 3, flow 148.79 bbls 37.6-gr ⅛-in ch 1010 lbs tp, cas sealed, gas/oil ratio 845/1, perf 6426-34 ft, td 6560 ft.

Jackson County: Lolita—Magnolia's Four-Way 8, blk 146, flow 132.4 bbls 42.2-gr oil 9/64-in ch 400 lbs tp, 1150 lbs cp, gas/oil ratio 745/1, perf 6399-6405 ft, td 6405 ft.

Jackson County: Maurbro—Humble's Mauritz 3-B, B. J. White league, flow 303 bbls 25.1-gr oil ¼-in ch, 250 lbs tp, 450 lbs cp, gas/oil ratio 198/1, sand 5215 ft, td 5238 ft; Mike Strauss 6, flow 378 bbls 25-gr oil ¼-in ch, 400 lbs tp, 500 lbs cp, gas/oil ratio 236/1, top sd 5214 ft, td 5222 ft.

Jackson County: North LaWard — Cities Service's Graves 1, blk 18, flow 194 bbls 27.6-gr, 9/64-in, 1520 lbs tp, 1980 lbs cp, perf 5198-5201 ft, gas/oil ratio 1717/1, td 6507 ft. Harrison & Abercrombie's Woodruff 1, blk 32, flow 258 bbls fluid, 25% sw, rest 24.5-gr, ⅝-in ch, 120 lbs tp, 425 lbs cp, perf 5210-22 ft, gas/oil ratio 900/1, td 5284 ft. Humble's Four-Way 5, blk 45, flow 523.9 bbls 25.3-gr, ¼-in ch, 600 lbs tp, 650 lbs cp, gas/oil ratio 255/1, sand 5207 ft, td 5221 ft. Magnolia's Gordin 14, lot 12, flow 121.36 bbls 24.4-gr, 7/64-in ch, 535 lbs tp, 700 lbs cp, gas/oil ratio 229/1, perf 5211-16 ft, td 5225 ft. Phillips' Johnson 3, blk 135, flow 86.48 bbls 24.5-gr, ¼-in ch, 350 lbs tp, 250 lbs cp, gas/oil ratio 240/1, perf 5214-20 ft, td 5281 ft.

Jackson County: Texana—Sinclair Prairie's Gardner 1, McNutt lge, ½ mi n prod, abnd 8027 ft.

Jackson County: Wildcat—Rowan & Hope's Simons 1, W. J. E. Heard sur, 2 mi e Edna, abnd 6309 ft.

Jim Wells County: Ben Bolt—H. H. Howell's Lindsay & Reed 3-A, blk 21, flow 203.6 bbls 3/16-in ch, 825 lbs tp, 1180 lbs cp, perf 5327-44 ft, td 5292 ft.

Jim Wells County: Orange Grove—Kilgore Developers' Kuck 2, blks 10 & 11, flow 74.25 bbls, 7/64-in ch, 1050 lbs tp, 1650 lbs cp, perf 5096-5100 ft, td 5105 ft.

Jim Wells County: Premont—J. Storm's C. M. Laughlin 1, sec 77, abnd 4537 ft.

Jim Wells County: Seeligson—Magnolia's Seeligson 27, A. Ramirez gr, flow 108.18 bbls 40.8-gr, 7/64-in ch, 1900 lbs tp, 2400 lbs cp, perf 6098-6101 ft, gas/oil ratio 1024/1, td 6237 ft. Sun's Canales 1, sec 364, flow 121 bbls 41.8-gr, 7/64-in ch, 1080 lbs tp, 1220 lbs cp, perf 5988-92 ft, gas/oil ratio est 580/1, td 6010 ft; J. W. Miller 3, sec 65, flow 194.99 bbls 43.6-gr, 7/64-in ch, 1125 lbs tp, 1200 lbs cp, gas/oil ratio 675/1, perf 5968-80 ft, td 6006 ft. Transwestern Oil Co.'s Dunlap 9, secs 179 & 181, flow 78 bbls 41.7-gr, 5/64-in ch, 1050 lbs tp, 2010 lbs cp, gas/oil ratio 870/1, perf 5928-32 ft, td 6252 ft; L. Seeligson 2-A, sec 65, flow 71 bbls 41.3-gr, 7/64-in ch, 1125 lbs tp, 1300 lbs cp, gas/oil ratio 731/, perf 5934-39 ft, td 5990 ft.

Nueces County: Agua Dulce—R. H. Hawn's Wofford 3-D, sec 206, flow 224 bbls 38-gr, ⅛-in ch, 1750 lbs tp, 1850 lbs cp, gas/oil ratio 665/1, perf 7013-25 ft, td 7057 ft. Texon Royalty Co.'s Austin 6, Palo Alto gr, flow 194.45 bbls 38.9-gr, ⅛-in ch, 1750 lbs tp, 1900 lbs cp, gas/oil ratio 730/1, perf 7030-50 ft, td 7053 ft; Eliff 7, Longoria gr, abnd 6004 ft. S. E. Wilson, Jr., et al's Union Central 1, sec 2, dual sand, each zone est 80,000 gas open flow, perf 6425-80 ft, 6255-86 ft, td 6966 ft.

Nueces County: East Flour Bluff—Humble's Reter 1, lot 14, blk 49, 3000 gas, spray oil ⅛-in chk, perf 6630-35 ft, td 6957 ft.

Victoria County: Cologne—Houston Oil Co.'s J. Hornstein 2-A, blk 43, est 22,000 ft open flow, perf 4362-72 ft, td 5040 ft.

WILDCAT START

Goliad County—Lewis Prod. Co.'s Knocke 1, 660 ft n & e lines of 351-ac tr, H. M. Sally sur, 10 mi se Yorktown, lcn 3800-ft test.

SOUTH CENTRAL TEXAS

COMPLETIONS

Bastrop County: Carroll—H. H. Coffield's Carroll 9, A. Mays sur, abnd 2305 ft.

Caldwell County: Bee Creek—R. R. Ogden's J. W. Miears 12-B, Swearingen sur, abnd 2416 ft.

Kendall County: Wildcat—York Pet. Co.'s Werner 6, sec 781, show Ellenberger 1022-33 ft, abnd 1034 ft.

LaSalle County: Washburn—Quintana Pet. Co.'s South Texas Syndicate 7, sec 86, flow 436.08 bbls 41.5-gr, ¼-in chk, 480 lbs tp, cas sealed, gas/oil ratio 425/1, Wilcox 5542-72 ft. 5-in cas 5544 ft, td 5574 ft; South Texas Syndicate 8, sec 88, abnd 5650 ft.

Lee County: Wildcat—M. M. Miller's Smith 1, J. Popponoe sur, 1½ mi nw Ledbetter, abnd 5803 ft.

WILDCAT STARTS

Bastrop County—Marts & Beaven's W. McWilliams, 1395 ft se l, 660 ft sw l 97-ac, G. J. Glasscock sur, Elgin pros, dr 1500 ft on 3500 ft cont. Ogden & Riddle Oil Co.'s C. L. Riddle 3-B, 330 ft ne l 990 ft se l 400 ac, J. B. Blalock sur, 4 mi n Dale, lcn.

SOUTHWEST TEXAS

COMPLETIONS

Duval County: Sejita—Trinity Gas Co.'s A. Garcia 1, tr 32, Redondo gr, flow 579 bbls 43.1-gr, ¼-in chk, 900 lbs tp, 1200 lbs cp, gas/oil ratio est 525/1, perf 5784-92 ft and 5795-97 ft, td 5930 ft.

Duval County: Wildcats—Magnolia's DCRC 1, sec 909, 10 mi sw Freer, abnd 4100 ft. J. L. Scott's Saenz 1-A, sec 526, 10 mi nw San Diego, Kreis outpost, abnd 3328 ft. Well-

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ington Oil Co.'s Glasscock 2, LaHuerta gr, 3 mi ne Concepcion, abnd 6785 ft.

Starr County: Rincon—Continental's Slick 102-B, sec 266, flow 96 bbls, 3/16-in chk, 180 lbs tp, 820 lbs cp, perf 3892-3925 ft.

Starr County: Sun—Sun's Montalvo 2-C, Los Retachez gr, flow 134.49 bbls 37-gr, 3/16-in chk, 325 lbs tp, 950 lbs cp, perf 4907-14 ft, gas/oil ratio 387/1, sand 4907 ft, td 5400 ft.

Starr County: Wildcat—Coastal Refineries' D. Guerra 1, sh 34, por 107, 17 mi n Rio Grande City, abnd 3588 ft.

Webb County: McLean—O. W. Killam et al's McLean 1, sec 610, flow 168 bbls 54.5-gr, ¼-in chk, 70 lbs cp, gas/oil ratio 100/1, perf 3243-49 ft, td 4016 ft; McLean 2, pump 165.5 bbls 55-gr, gas/oil ratio 5/1, perf 3218-26 ft, sand 3218 ft, td 3280 ft; McLean 3, pump 186 bbls 55-gr, gas/oil ratio 10/1, perf 3226-36 ft, sand 3226 ft, td 3257 ft. Magnolia's McLean 2, sec 121, abnd 3535 ft.

Webb County: Wildcat—Mills Bennett's R. V. de Benavides 1, blk 1, sec 2, Cuellar gr, 3 mi n Bruni, abnd 2506 ft. O'Neil, Bedwell & Shukeat's Bruni 1, blk 75, Borrego gr, 10 mi sw Mirando City, abnd 2009 ft.

WILDCAT STARTS

Duval County—Henderson Coquat's Eddins 1, 660 ft n & e lines 80-ac lse, sw¼ sec 375, 6 mi ne Benavides, lcn 6000-ft test; Southland Life 3-C, 610 ft n l, 737 ft w l se¼ sec 1, Ball sub, 1⅛ mi nw Southland fld, dr.

McMullen County—Argo Oil Corp.'s Fryette 1, 990 ft s l, 660 ft e l sec 66, 14 mi w Clegg, lcn 3500-ft test.

Starr County—Sun's Frost 1, 3200 ft n l, 660 ft w l 4085-ac lse, Por 96, 14 mi ne Rio Grande City, lcn 5000-ft test. L. H. Wentz's S. Gonzales 1, 660 ft n & w lines tr 10-C, Por 105, 11 mi nw Rio Grande City, lcn 2750-ft test.

Webb County—Mills Bennett's Benavides 2, 660 ft se and sw lines blk 3, sec 6, 3 mi nw Bruni, mi 4000-ft test.

Texas Gulf Coast

Sealy Area Wildcat Finds Shows in Wilcox

Shows reported in Austin County wildcat indicating new Wilcox field; wildcat in Aldine area, Harris County, testing.

Austin County: Shell Oil Co. is coring and drilling ahead in John Hintz 1, deep Wilcox test in Sealy area, around 10,800 ft. Several sands were found above 10,000 ft, some showing gas and distillate. One drill-stem test at 8750 ft is credited with showing 500 pounds pressure and 20 ft of distillate. In the Industry area, Humble Oil & Refining Co. is rigging Miller 1, deep Wilcox test.

Harris County: George W. Strake is making production tests in Phenix 1, Aldine area, after finding oil and gas shows in the Yegua. Casing was cemented at 7991 ft. Sand sections were thin in upper part of hole, while the better horizons were reported near bottom, but a drill-stem test failed when the hole caved.

Brazoria County: Stanolind Oil & Gas Co. has two wells drilling and testing in Brazoria County, Houston Farms Development 1, Chocolate Bayou area, coring and drilling near 10,256 ft. A producer here would be a major extension to the field's deep production. Stanolind's Murchison 1, Chenango area, is making production tests in a series of sands from 8600 ft to below 10,000 ft. Several sections showed for production, however all information is being withheld.

COMPLETIONS

Fort Bend County: Wildcat—Circle Oil & Sam Bashara's Sugarland Industries 1, 1005 ft fr s l & 660 ft fr e l tract, E. Alcorn & William Stafford survey, abnd 6210 ft.

Harris County: Pierce Junction—Hamill & Smith's Settegast 1, 107 ft fr w l 100-ac lse, Joseph Kopman sur, A-185, abnd 3010 ft.

WILDCAT START

Matagorda County—Eugene Jordan's Howard 2, 3 mi e Pledger, 742 ft fr ne l & 651 ft fr s l sec 14, lcn 3500-ft test.

Louisiana Gulf Coast

Charenton Flank Well Open New Pay Horizon

Wildcat in Charenton area indicates new producing horizon; Amerada and Phillips open new sand at Lake Chicot.

St. Mary Parish: Fifteen Oil Co. is making a production test in South Coast 2, deep wildcat on southeast side Charenton field, after recovering 35 stands gas-cut mud, 7 stands oil and mud, and no salt water on a drill-stem test at 9230 ft. Although other deep tests have been drilled in area, this well is the first to pick up the Miocene that showed oil and gas. Perforations were made at 9232-40 ft for the test. The company has 2500 acres in the area. Charenton field produces from shallow horizons.

St. Martin Parish: Amerada & Phillips have opened a new sand in the Lake Chicot field with Schwing-Case 1 flowing 165 bbls fluid through perforations at 10,340-344 ft. Seven percent of the flow was salt water, gravity 28.9. The field has two wells, State 1 and 2 flowing from 9023-48 ft.

Ascension Parish: Pan-American Production Co. tested gas and distillate in United Lands 20, on northeast flank of Sorrento Dome. Perforations were made at 4134-42 ft with 40 holes. Bridge plugs were set to test a sand slightly higher in the hole.

Acadia Parish: The Branch prospect will be tested again with Union Sulphur Co. preparing to drill Gueno 1 in 51-8s-2e. Humble drilled a 10,000-ft dry hole in sec 83-8s-2e, northeast of the new location.

COMPLETIONS

Evangeline Parish: Ville Platte—Continental's Haas-Vidrine 1-35, 1650 ft sw and 450 nw e cor 44-3s-2e, flow 382 bbls, 12/64-in chk, td 10,305 ft.

Iberia Parish: Wildcat—Paul G. Benedum's LLE 1, Patoutville area, 660 ft at ra se & sw l 4-13s-7e, abnd 9020 ft.

Jefferson Parish: Lafitte—Texas Co.'s Madison Realty Co. 11-A, 4971 ft n & 2205 ft e of sw cor 20-17s-24e, perf 9595-9655 ft, flow 324 bbls ¼-in chk, gor 831/1, gr-37.5, td 10,173 ft.

LaFourche Parish: Chacahoula—Sun's Dinert-Stark-Brown 13, 1328 ft w, 218 s nec 76-15s-15e, perf 7181-7218 ft, flow 198 bbls ⅛-in chk, td 7411 ft.

LaFourche Parish: Golden Meadow—Berkshire Oil Co.'s Nicol 17, 9-19s-22e, perf 5165-70 ft, flow 140 bbls 9/64-in chk, tp 400, cp 1200, td 6350 ft.

Plaquemines Parish: West Bay—Gulf's Buras Levee 6-E, 1410 ft s, 2360 w nec 35-22s-30e, stuck drill pipe, abnd 10,015 ft.

Plaquemines Parish: Potash—Humble's Orleans Levee Board 57, 14-18s-15e, perf 8707-40 ft, flow 430 bbls 12/64-in chk, new sand, td 8763 ft.

WILDCAT STARTS

Calcasieu Parish—Gulf's Louisiana Sulphur Mining 1, deep east flank test at Edgerly, 2900 ft s, 1630 w nec 33-9s-11w, company rig, lcn.

Evangeline Parish—Texas Co.'s LaDanois Land Co. 2, Pine Prairie area, 1620 ft e, 700 n sec 35-3s-1w, 1350 ft ne LaDanois 1, 9933 ft dry hole, Loffland Brothers, contractor, drilling.

Terrebonne Parish—Humble's Continental Land Fur Co. 1, West Castell area, 24-18s-12e, lcn.

North Louisiana

Producer Completed Four Miles North of Rodessa

Well four miles north of Rodessa production completed as oil producer. Concordia wildcat disappoints. Midway trend leasing dips into North Louisiana.

Rodessa: Messenger and associates' Benefield & Singleton 1, John Wanhope Survey, Cass County, Texas, four miles north of production on the southwest Rodessa axis, completed in Gloyd sand after

perf 6000-8 ft, flowing 12½ bbls oil per hour through ¼-in choke. Total depth 6025 ft. May be nose off fractured Rodessa structure or on separate structure.

Concordia Parish: California Co.'s Pan-American 1, NW 16-9n-10e, Concordia Parish, after perforating twice at 4565-75 ft flowed 1 bbl per hour, half oil and half basic sediment and water. Total depth is 6458 ft; elev 71 ft.

Midway Trend: Feeling the effects of the leasing play from Midway in Arkansas, considerable leasing has developed in the North Louisiana Basin and west of the Monroe Uplift.

North Lisbon: Union Producing Company's McDonald 1, C SW 13-21n-5w, continued to set new depth records for North Louisiana as it drilled below 12,431 ft.

COMPLETIONS

Bossier Parish: Sligo—Triangle's Kerr A-4, se ne 24-17n-12w, pump 75 bbls, 3154 ft.

Caddo Parish: Hosston—F. L. Kyle's Ellerbe 1, sw ne 9-21n-16w, pump 5 bbls, 2374 ft. Ober & Son's Fee 3, sw nw 36-21n-16w, abnd 2382 ft. W. L. Newton's Stiles 1, sw nw 32-21n-16w, abnd 1723 ft.

Caddo Parish: Dixie—Transport Oil Co.'s Wilkinson 1, sw ne 22-20n-14w, abnd 911 ft.

Catahoula Parish: Wildcat—Carter's Davis 1, c ne nw 29-5n-6e, Vicksburg 1956, Cockfield 2349, Cook Mountain 2872, Sparta 3157, Cane River 3908, Wilcox 4182, abnd 7386 ft. Sinclair Prairie's Tensas Delta 1, ne se 6-7n-5e, Vicksburg 849, Cockfield 1290, Cook Mountain 1916, Sparta 2053, Cane River 2778, Wilcox 2984, Midway 5593, abnd 6020 ft.

Catahoula Parish: Larto Lake—Carter and Phillips' Tensas Delta B-4, se se 14-5n-5e, abnd 5265 ft.

Claiborne Parish: Haynesville—A. G. Oliphant's H. P. Camp 1, se ne 24-23n-8w, perf 5334-74 ft with 35 shots, abnd 5374 ft. Ohio's Sherman 1, ne se 23-23n-8w, perf 5308-18 ft, 5321-39 ft; 5373-77 ft, used 3000 gals acid, flow 44 bbls hr, ¼-in chk, tp 650, cp 1200, td 5418 ft; Taylor 1, nw ne 14-23n-8w, perf 5169, 5272-77 ft, 5322-25 ft, used 5000 gals acid, flow 31 bbls hr 20/64-in ch, cp 850, tp 500, td 5363 ft; Bond 1, nw ne 21-23n-8w, flow 840 bbls, 5370 ft.

LaSalle Parish: Nebo—H. L. Hunt's Goodpine F-123, ne se 29-7n-3e, pump 24 bbls, 5395 ft. Harry Shulman's Shapiro 3, 39-7n-3e, pump 122 bbls, 4024 ft. H. L. Hunt's Goodpine A-43, ne nw 21-7n-3e, pump 104 bbls oil 6 bbls water, td 4100 ft; Goodpine F-75, se se 16-7n-3e, pump 141 bbls, 4116 ft; Goodpine F-76, ne nw 22-7n-3e, pump 139 bbls, 4087 ft; Goodpine F-77, ne se 21-7n-3e, pump 176 bbls, 4127 ft; Goodpine F-78, nw sw 22-7n-3e, pump 115 bbls oil 10 bbls water, 4261 ft; Goodpine F-80, se nw 21-7n-3e, pump 100 bbls oil 6 bbls water, 4152 ft; Goodpine F-82, nw se 21-7n-3e, pump 122 bbls oil 14 bbls water, 4174 ft.

LaSalle Parish: Wildcat—Phillips and Carter's Tensas Delta H-1, c se sw 15-5n-4e, Wilcox 3527 ft, abnd 6572 ft.

LaSalle Parish: South Olla—Petersen Pet. Co.'s Tremont B-4, se sw 25-9n-2e, abnd 4105 ft.

Grant Parish: Wildcat—Alford Oil Co. et al's Dubois 1, se nw 9-7n-4w, Cockfield 512, Cook Mountain 1110, Sparta 1360, Cane River 1860, Wilcox 2102, Midway 4844, abnd 4862 ft.

Natchitoches Parish: Wildcat—George H. Echols' Union 1, ne ne 24-6n-7w, abnd 5810 ft.

WILDCAT STARTS

Natchitoches Parish—Geo. H. Echols' Bodcaw 1, ne ne 13-13n-8w, rig.

Arkansas

Two Dry Holes, Two More Oil Wells at Midway

Two dry holes at Midway as two more oil wells completed. Second well completed at Big Creek.

Midway: Tests north and northeast of the discovery at Midway, Lafayette County, were dry holes, although an east offset was one of two wells successfully completed. A previous well, second in the field, had to re-perforate after salt water showed with the oil but on second attempt water was practically shut off. North of the discovery, in Section 3-15-24, P. R. Rutherford's Stamps Land Company 1, abnd at 6579 ft, after topping porosity low at 6572 ft (elev 287 ft.). Northeast of the discovery, Magnolia's Johnson 1, NE NW 11-15-24, was abnd at 6581 ft, not topping porosity until 6537 ft (elev 285 ft.).

East offset to discovery, J. I. Roberts' Bond 1, flowed 39 bbls of 36-gravity oil per hour after perf 6375-6400 ft. Also a good well was Arkansas Fuel Oil Co.'s Creek 1, NE SE 10-15-24. Second well of the field, Barnsdall's Dobson 2, SE NE 10-15-24, after perforating at 6450-6500 ft and flowing 215 bbls in 12 hours, had salt water to appear and had to squeeze and reperforate eliminating all but .2 of 1 percent water but reducing flow materially. Barnsdall's Dobson 1 is flowing into tanks ungauged and Frankel's J. H. Burns 1 is preparing to test at 6523 ft after topping porosity at 6493 (elev 293 ft.).

E. P. Wingfield abandoned location for John Rogers 1, Section 1-15-24, after spudding. Five other tests at Midway are drilling below 6200 ft or waiting on cement on final casing.

Big Creek: After considerable trouble with water encroachment, Big Creek's second Smackover lime condensate well was successfully completed at J. W. Love's Stager 1, C NE 9-17-21, flowing 6 bbls distillate hourly through ¼-in choke.

COMPLETIONS

Columbia County: Big Creek—J. W. Love et al's Stager 1, c ne 9-17-21, perf 7973-79 ft, flow 6 bbls dist per hr, ¼-in chk, tp 2200 lbs, 7979 ft.

Columbia County: Stephens—Bailey Johnson et al's Smart 1, sw nw 12-15-20, abnd 1118 ft.

Lafayette County: Midway—Arkansas Fuel's Creek 1, ne se 10-15-24, elev 269 ft, porosity 6421 ft, flow 172 bbls 12 hrs, 5/32-in chk, tp 750 lbs, td 6494 ft. Barnsdall's Dodson 2, se ne 10-15-24, perf 6450-6500 ft, flow 5 bbls hr, trace water, ¼-in chk, tp 110 lbs, elev 282 ft, porosity 6424 ft, Buckner 6230 ft, td 6500 ft. Magnolia's Johnston 1, nw sw 11-15-24, porosity carrying water 6537 ft, abnd 6581 ft. P. R. Rutherford's Stamps Land Co. 1, nw sw 3-15-24, abnd 6579 ft. J. I. Roberts' Bond 1, ne sw 11-15-24, flow 39 bbls hr, ¼-in chk, perf 6375-6400 ft, td 6500 ft.

Mississippi

COMPLETIONS

Adams County: Wildcat—R. L. Fisher et al's Lambdin 1, nw nw 36-8n-2w, Vicksburg 1402, Jackson 1495, Moody Branch 1918, Cockfield 1943, Cook Mountain 2429, Sparta 2688, Talahatta 3807, Wilcox 3952, abnd 7105 ft.

Yazoo County: Tinsley Dome—A. Glover's Cessna 1, nw se 7-10n-2w, pump 40 bbls oil 700 bbls water, td 5642 ft. Mid-States Oil Corp.'s Cummings 1, sw se 31-10n-2w, pump 90 bbls, 5214 ft.

WILDCAT STARTS

Pearl River County—Placid Oil Co.'s Southern Mineral Corp. 1, c sw sw 27-1s-14w, rig.

Perry County—Victory Drlg. Co.'s Newman 1, c nw se 21-1s-9w, rig.

Sharkey County—E. C. Johnston et al's Klaus 1, ne ne 19-11n-7w, sp.

Alabama

WILDCAT STARTS

Clarke County—Ranger, Grubb et al's Scotch 1, c ne nw 14-10n-3e, mat.

Winston County—George L. Reasor's Henderson 1, c nw ne 30-9s-10w, rig.

Rocky Mountain Area

New Field in Prospect In Wyoming

Development of a new Wyoming oil pool appears eminent while Cody Dome extension gets good oil saturation in new deep zone. Colorado wildcat plugging back to test oil show. Montana wildcat in Sweetgrass Hills running pipe to test gas show.

Sherard Dome: Sinclair Wyoming Oil Co.'s Carter 1, C NE SE SE 31-25n-88w, Sherard structure, Carbon County,

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Wyoming, topped objective Tensleep 5057 ft, running 7-in to test Tensleep saturation, td 5100 ft. Past November drill-stem test 2958 ft, Lakota showed 6.0 gas, Frontier 1752 ft, and 1810 ft, had substantial shows oil and gas, but operator optioned to drill test to deep Tensleep objective. Sherard is 6 miles south, 3 miles west of Mahoney Dome field.

Cody Dome: Husky Refining Co.'s Stump 2, SW SW 21-53n-101w, Cody Dome (Shoshone) field, Park County, Wyoming, topped unproved Tensleep at 4625 ft, drilling saturated section 4753 ft, pointing to extension ½ mi southeast in new sand.

Kit Carson: O. E. Torrey's Whitson 1, NW NW SE 12-13s-49w, Kit Carson area, Cheyenne County, Colorado, resumed operations, plugging back from 4819 ft td, to test oil show Pennsylvanian 4810-12 ft.

Sweetgrass Hills: Northeast Kevin-Sunburst, A.A. Oil Co.'s Fey 1, SW SE SE 32-37n-2e, Sweetgrass Hills area wildcat, Toole County, td 1505 ft, is underreaming 8¼-in from 1300 ft to test gas sand topped at 1500 ft, will probably make gas discovery.

MONTANA

COMPLETION

Glacier County—Texas Co.'s Bonnet 5, cwl se se 7-32n-5w, 105 bbls swab, elev 3664 ft, Lower Cut Bank 2892-93 ft, td 2898 ft.

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WYOMING

COMPLETIONS

Niobrara County — Continental's Lease 1 Apex 6, nw sw ne 34-36n-65w, Lance Creek, pump 450 bbls, Leo series 5343-5520 ft td, elev 4431 ft; Lease 4 Rodeo 8, ne se ne 35-36-n-65w, Lance Creek, pump 60 bbls, Basal Sundance 4394-4420 ft, td, elev 4486 ft.

Park County—Continental's Lease 3 Northern Pacific 3, se ne nw 23-58n-98w, rotary, Frannie, swab 331 bbls, Tensleep 3418-75 ft td.

New Mexico

Lea County Wildcat Showing Favorably

Lea County wildcat registering favorable structural position. Big gas flow delaying work on Lynn pool test. Failure credited to Lynch-Lea extension sector.

Wildcats: Mascho Oil Co. and American Drilling Corp.'s State-Tidal 1, 7 miles northwest of Tatum, drilling anhydrite 3180 ft, logged base salt 2800 ft and top Yates 2870 ft, elev 4135 ft, being structurally high to nearest failure. Phillips' State-Philmex 1, wildcat between Maliamar and Vacuum fields, drilling hard lime 4740 ft and above sulphur water level. Prexy Wilson et al's Saunders 1, 6 miles west Jal field, drilling anhydrite 4710 ft, having passed known producing zones.

Failure: Cities Service's McDonald-Jewett 1-AA, SE SW SW 17-20s-34e, near isolated producer completed in 1929 as extension to Lynch-Lea area, abandoned in sulphur water 3630-33 ft, elev 3638 ft. Continental et al's Lynn 5-A-28, east edge Lynn pool, encountered dry gas rated 60,000,000 ft daily at 3218-76 ft, and mudding off at 3276 ft to deepen to 3600-ft oil zone.

COMPLETIONS

Eddy County: Wildcat — Stroup-Yates & Flynn's State-Hartz 1, c ne nw 16-21s-23e, elev 3964 ft, top white lime 440 ft, abnd in sul w 2887 ft.

Eddy County—Herbert Aid et al's State-F-W-Y Oil Co. 2, nw ne ne 25-17s-28e, pump 8 bbls, shot 50 qts 855-64 ft. Morton & Elder's Root 3, nw sw ne 7-17s-30e, flow 135 bbls ½-in, shot 450 qts 2670-2858 ft. Premier Oil Co.'s Madden-Beeson 8-B, c nw sw 26-17s-30e, flow 206 bbls 5/16-in, shot 70 qts 3225-3246 ft.

Lea County: Hobbs — Samedan Oil Co.'s Byers-Conoco 4, 2205 ft from n and 1293 ft from e 3-19s-38e, pump 18 bbls, plus 90% water, acid 3500 gals 4200-33 ft.

Lea County: Maljamar—Southern Union Prod. Co.'s Pearsall 2-B, c se nw 34-17s-32e, elev 3943 ft, top salt 1255 ft, abnd 5150 ft.

Lea County: Rhodes — Krupp-Flaherty Oil Co.'s Moberly 6-B, c sw sw 21-26s-37e, flow 144 bbls ¾-in, 39.7-gr, shot 50 qts 3248-83 ft, td 3310 ft.

California

Tests Projected in Tulare and Ventura

Fresno County wildcat preparing for abandonment; new tests scheduled for Tulare and Ventura counties.

Fresno County: After testing wet at intervals 8010-8025, 8040-8055, and 8080-8095 ft, General Petroleum Corp. is preparing to abandon Esperoad 75-33, Section 33-16-17 in the Helm area. Bottom is 8266 ft and shutoffs between perforations are being examined preparatory to abandonment.

Tulare County: Northwest of Tulare 2½ miles in sec 33-19-24, Richfield Oil Corp. has staked location for Tulare Community 1-1, a wildcat.

Ventura County: Signal Petroleum Co. of California is making preparations to test to about 2600 ft 3 miles southeast of Hueneme in the Oxnard district. Heavy gravity production has been developed in the district 4 miles southeast.

COMPLETIONS

Fresno County: Jacalitos Hills — Wilshire Annex Oil Co.'s 45-26E, 369 ft e 444 w c 26-21-15, flow 180 bbls 14/64 bean, 1250 lbs, 40 ft perf 3863 ft, brown shale 3855 ft, td 3867 ft.

Kern County: Coles Levee—Shell's KCL-B 88-19, 343 ft n 341 w sec 19-30-25, swab water, trace oil, 354 ft perf 9967 ft, plugged 9970 ft. Top oil sand 9617 ft, abnd 10,542 ft.

Kern County: Kern River—Ray Frampton's No. 4, 1327 ft n 65 e swc 27-28-28, pump 5 bbls, 300 ft perf 413 ft, td 413 ft.

Kern County: McClung—A. N. Macrate & Son's Haberfeld 1, 990 ft n 330 w c 32-29-26, bottomed barren Vedder, barren lower Stevens 8090 ft, Olcese 11,180, abnd 12,035 ft.

Kern County: Mount Poso—General's Helsen 25, 1329 ft n 453 w s¼ cor 16-27-28, pump 266 bbls, 46 ft perf 2019 ft, Vedder 1975 ft, td 2020 ft.

Los Angeles County: Del Valle—R. E. Havenstrite's Lincoln 9, 228 ft n 2231 w sec 16-4-17, flow 714 bbls ½-in bean, 420/1140 lbs, perf 6245-6260 ft, first oil sand 6060 ft, Del Valle 6850 ft, td 7623 ft.

Los Angeles County: Rosecrans — Union's Rosecrans 46, 551 ft n 729 w Rosecrans & Broadway, flow 234 bbls 76/64 bean, 390/400 lbs, 680 ft perf 8543 ft, td 8546 ft.

Los Angeles County: Wilmington — C. M. Mores' McBay 1, 301 ft n 140 w c L & Bayview, flow 160 bbls 17-gr 16/64-in bean 1101/0 lbs, 400 ft perf 3737 ft, td 3738 ft. Silver Petroleum Co.'s Girtin 1, 103 ft n 585 w Wilmington & Mauretania, flow no est, 40 ft perf 3740 ft, td 3740 ft. Union Pacific's UP 212 5566 ft s 2269 e Ford & Anaheim, flow 1040 bbls 29.5-gr, 320/560 lbs, 511 ft perf 4022 ft, td 4030 ft.

Orange County: Huntington Beach—H. S. Kohlbush's Pac. Am. 9, 45 ft n 702 e Ellis & Edwards, pump 125 bbls 23-gr, perf 4603-4637 ft, td 4710 ft.

Santa Barbara County: Carpenteria—Century Oil Co.'s Hall 1, 250 ft n 150 w se cor Hall ppty N Highway 101, sec 34-4-25, trace heavy oil bailed, abnd 715 ft.

OLD WELLS DEEPENED

Los Angeles County: Dominguez — Shell's Reyes 95, 1738 ft s 749 e Victoria & Central, 220 bbls gas lift, perf 7695-7680 ft, 7615-7585 ft, otd 9180 ft, td 9180 ft.

Los Angeles County: Wilmington—Sonwell Oil Co.'s No. 3, 190 ft s 115 e sec Denni & Broad, pump 173 bbls, perf 2678-2858, 2939-3189 ft, td 3630 ft, pb 3295 ft.

WILDCAT STARTS

Kern County: Belridge Area—Shell's Williams 45-6, 6-28-20, lcn.

Kings County: Kettleman South Dome Area—Bristol Oil Corp.'s Hellman 1, 2-25-29, rig.

Ventura County: Oxnard Plains Area—Signal Petroleum Co.'s No. 1, 36-1-22, lcn.

Michigan

Completions Continue Steady Decline

Two wildcats disappointing on initial production tests. Completions continue steady decline.

Wildcats: Miller Brothers' Sutliff 1, SE SE SE 10-9n-1e, Saginaw County, swabbing 6 to 14 bbls oil, 42.2 gravity, after 30-qt. shot and 250-gal. acid treatment to Traverse lime pay at 2480 ft. It will be re-treated. Unless production is boosted by new treatments wildcat probably will be deepened to Dundee.

Associated Petroleum Co.'s Blackmer 1, NE SE NE 15-8n-14w, Ottawa County, deepened 2½ to 1885½, showed additional Traverse lime oil saturation but also trace of water; commercial status questionable.

Shakespear Associate's City of Cadillac 1, W½ SE NE 35-23n-10w, Wexford County, logged Monroe lime 3803 ft and bottomed out dry at 3828 ft after a light oil show at 3811 ft.

COMPLETIONS

Allegan County: Wildcat — Winchester & Burton's Hellwig 1, se ne se 13-1n-16w, Traverse 1176 ft, abnd 1183 ft.

Bay County: Kawkawlin — Chapman Oil Co.'s Duso 2, n½ ne ne 15n-4e, Dundee 2766-2922 ft, flow 336 bbls 8½ hrs after acid, td 2922 ft.

Clare County: Lincoln—Freeman Oil Co.'s Callahan 1, se sw se 25-18n-5w, Dundee 3974 ft, sw 3984 ft, abnd 3989 ft.

Osceola County: Reed City—Ohio's Vincent 1, n½ ne ne 6-17n-10w, Monroe 3573-3615 ft, flow 119 bbls 5 hrs after acid, td 3615 ft.

Sanilac County: Wildcat—C. W. Teater's Cosgrove 1, w½ sw nw 14-14n-12e, Dundee 2608 ft, abnd 2836 ft.

Wexford County: Wildcat—Shakespear Associate's Cadillac 1, w½ se ne 35-23n-10w, Monroe 3809 ft, abnd 3828 ft.

WILDCAT STARTS

Allegan County—R. B. Tamblyn's Townsend 1, nw ne se 5-1n-11w, rig. Charles Cook's Trask 1, s½ nw sw 34-2n-12w, dr.

Missaukee County—Turner Pet. Corp.'s Cavanagh 1, n½ se nw 14-21n-7w, dr.

Newaygo County—Turner Pet. Corp.'s Swanson 1, s½ sw se 3-13n-11w, rig.

Eastern States

NEW YORK

COMPLETIONS

Allegany County—Messer Oil Co., Vosburg farm, Bolivar, 15 bbls, Richburg, 1377 ft. South Bolivar Oil Co., McKelvey farm, Bolivar, 5 bbls, 1354 ft. Producers Oil Corp., A. Keller-Scott farm, Wirt, 5 bbls, Richburg, 1067 ft. I. B. Lawrence, Allen lot, Alma, 4 bbls, Richburg, 1038 ft. Gigee & Tullar, Gigee farm, Bolivar, 6 bbls, Richburg, 1427 ft. J. P. Herrick 1, Howe farm, Bolivar, 9 bbls, Richburg, 1382 ft. E. B. Sage & Co. et al, Vars farm, Bolivar, 5 bbls, 1389 ft. Lester Stout et al, Brandes farm, Willing, 6 bbls, Fulmer, 1375 ft. Forest Oil Co., Randolph farm, Wirt, 10 bbls, Richburg, 1337 ft. Rufus Scott et al, Scott farm, Bolivar, 8 bbls, Waugh-Porter, 1432 ft.

INTAKE WELLS

Messer Oil Co., Vosburg farm, Bolivar, Richburg, 1369 ft. Bradley Prod. Corp., Nobles farm, Alma, Richburg, 1349 ft. South Bolivar Oil Co., McKelvey farm, Bolivar, Richburg, 1363 ft. V. V. V. Franchot, Emerson farm, Scio, Richburg, 1140 ft. Starr Oil Co., Neff farm, Wirt, Richburg, 1260 ft. Otsquago Oil Corp., Pike farm, Alma, Richburg, 1420 ft. Bradley Prod. Corp., Fitz-Carrol farm, Bolivar, Richburg, 1429 ft. Dick Oil Co., Bradley farm, Bolivar, Richburg, 1390 ft. P. J. Shughnessy et al, Daley farm, Alma, Richburg, 1268 ft. Bliven Hill Oil Co., McEwen-Norton farm, Amity, Scio, 842 ft. L. & D. Oil Co., Browning farm, Scio, 570 ft. McEbenwood Oil Co., Lynch farm, Andover, Penny, 1379 ft.

OHIO

COMPLETIONS

Ashland County—Hoag et al, Aber 2, 0.02 gas, 710 ft.

Athens County—Cromwell et al, Swartz 1, abnd 1620 ft.

Holmes County—Ohio Fuel, Mackey 1, 1.1 gas, 3481 ft.

Knox County—Knox Exploration Co., Cline 2, abnd 2969 ft.

Licking County—Ohio Fuel, Maharg 1, 0.11 gas, 2725 ft.

Medina County—H. C. Bishop, Bellus 1, 0.6 gas and 200 bbls, 3234 ft.

Monroe County—J. E. Lumbatis, Stallings 5, abnd 1528 ft.

Muskingum County—Atha Co., Fisher 1, abnd 4057 ft.

Summit County—East Ohio, Bender 1, 0.42 gas, 4450 ft.

Washington County—Tri-State O. & G. Co., Stone 1, abnd 1865 ft.

OLD WELL DRILLED DEEPER

Meigs County—Roy Proffitt, Krider 4, 0.2 gas, 3198 ft.

PENNSYLVANIA

COMPLETIONS

Armstrong County—Chestnut Ridge Gas Co., Culp 1, 0.17 gas, 3553 ft.

Clarion County—McNutt & Stahlman, Henry 1, 0.01 gas, 2801 ft. T. W. Phillips Gas & Oil Co., McElhattan 4, 0.04 gas, 2630 ft.

Greene County—Mfgrs. Light & Heat Co., Rice 1, 0.12 gas, 3477 ft.

Washington County—Bentleyville Fuel Co., Wherry 1, 0.23 gas, 1380 ft.

Westmoreland County—Peoples Natural Gas, Beale 1, 0.02 gas, 3156 ft.

WEST VIRGINIA

COMPLETIONS

Boone County—Hope Natural Gas, Nunnencamp 8582, 10 bbls oil & 0.1 gas, 2441 ft.

Braxton County—Pitts. & W. Va., Herold 7822, abnd 2523 ft.

Calhoun County—Hope Natural Gas, Bennett heirs 1, 0.62 gas, 1914 ft.

Clay County—Virginian Gaso. & Oil Co., Brown, Swann & Goshorn, 4 bbls, 1913 ft.

Jackson County—Mullins Gas Co., Board 1, abnd 5018 ft, Godfrey L. Cabot, Putnam 29, 11.05 gas, 5207 ft. W. Va. Gas Co., Miller 1, 4.2 gas, 4832 ft.

Kanawha County—South Penn, Burdette 4, abnd 1704 ft.

Marion County—South Penn Nat. Gas Co., Cunningham 14, 3 bbls, 3501 ft.

Mason County—Interstate Utilities Co., Dodson 1, abnd 1755 ft.

Pleasant County—Leavitt & Black, Leavitt 1, 0.05 gas, 3220 ft.

Ritchie County—H. M. Wilson, Colonial Asphalt Co., 1 bbl oil & 0.02 gas, 1849 ft.

Wayne County—Owens, Libby, Owens, Guyan Oil Co., 0.37 gas, 3118 ft.

Wetzel County—Carnegie Nat. Gas Co., Goddard 1, 2.94 gas, 3050 ft.

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Men In The Industry's News

J. TAYLOR FLY, formerly head of the legal division of Standard Oil Company of Argentina, has been transferred to the legal department of Standard Oil Company (New Jersey) in New York.

DAVID G. GRAY has been appointed director of marketing for District 3, Office of Petroleum Coordinator, Houston. Gray has been in the oil industry 27 years. He started with the Texas Pipe Line Company, 1915, in Houston. He was the assistant to the treasurer in charge of the oil accounting office when he resigned 10 years ago to organize and become president of Dale Oil & Refining Company. He left that company in 1931 to become manager of Waggoner Refining Company of Electra. During 1936-37 he operated his own drilling business. Late in 1937 he became executive vice president of the North Texas Oil and Gas Association, the position he held when he joined OPC.

W. L. DUCKER, JR., has returned to Tulsa to manage Product Engeneering Company after serving as Oklahoma state manager, contact distribution branch, War Production Board.

BOYD KOEPKE, engineer for Clarke Bros. Company, has been appointed to assist E. E. Robbins in the OPC office at Tulsa.

RAY L. DUDLEY, publisher of The Oil Weekly, addressed the Houston Chapter of the American Petroleum Institute, March 5, on "Criticism Will Not Do the Job." Following this address, John R. Suman, vice president of Humble Oil & Refining Company, gave his views on the same topic.

EUGENE H. BEARD has been appointed in charge of sales of Jarecki Manufacturing Company, Tulsa.

CLIFFORD SHUPERT has been placed in charge of the office and H. A. Brightwell, formerly with the company at Seminole, is the new city salesman. F. G. White has been transferred from Tulsa to El Dorado, Kansas; Don Waite, formerly at Russell, Kansas, has been transferred to Tulsa and John F. Conley has been transferred from Tulsa to the Wichita Falls area.

DR. HOMER L. DODGE, dean of the graduate school, University of Oklahoma, spoke to Engineers Club of Tulsa recently on "The University of Oklahoma Research Institute."

F. ALBERT HAYES, Boston, president of National Association of Purchasing Agents, addressed the Purchasing Agents Association of Tulsa last week.

E. J. GANN, former land man for Red Bank Oil Company, Houston, has joined the land department of Danciger Oil & Refineries, Inc., Fort Worth.

FRED KOTYZA, West Texas geologist for Tide Water Associated Oil Company, has resigned to become assistant chief geologist for Fullerton Oil Company with district headquarters at Hobbs, New Mexico. Fullerton Oil Company recently opened a 7200-foot oil pool in Andrews County, Texas.

RALPH R. NEWQUIST has been named assistant to Walter Geist, vice president of Allis-Chalmers Manufacturing Company. Before assuming his new position, Newquist was the manager of the company's district office at Houston. He also has served in the district offices Chicago, Pittsburgh, and Boston since joining the company in 1934. Newquist graduated in electrical engineering from Pennsylvania State College. C. W. Schweers succeeds Newquist as manager of the Houston office.

A. J. SMITH, petroleum engineer on the field staff of the Texas Railroad Commission, has been transferred from Pampa to Midland for duty in West Texas.

K. J. BALENKO, formerly petroleum engineer for Phillips Petroleum Company at Odessa, Texas, is now in the company's natural gasoline department at Bartlesville, Oklahoma.

L. W. STORM of Schlumberger Well Surveying Corporation, addressed the North Texas Geological Society at Wichita Falls on February 25, on "A Resume of Current Opinion on Larger Features of Gulf Coast Sedimentation."

SOL SMITH has resigned as district engineer at Wichita Falls for the Texas Railroad Commission, and has accepted a position as assistant chemical engineer with the War Department, Chemical Welfare Service, located at Huntsville Arsenal, Huntsville, Alabama.

J. HOWARD PEW, president of Sun Oil Company, and W. S. S. Rodgers, president of The Texas Company, were named members of the steering committee of a war committee of the National Association of Manufacturers announced last week to act as a liason agency between industry and the War Production Board.

M. L. MAYFIELD, formerly with Cotton Valley Operators Committee, now is a member of the natural gasoline division of the Office of Petroleum Coordinator at Houston.

J. HARVEY WILLIAMS, president of J. H. Williams & Company, New York City and Buffalo, died in a New York City hospital, February 23, following an operation a few weeks previous. He would have been 60 years old March 22.

Williams was born in Brooklyn, N. Y., son of James H. Williams, founder of J. H. Williams & Company. Following the death of his father in 1904 he became vice president of the company, then in 1916, president, which office he has since continuously occupied. In 1923, when the Brooklyn plant was closed and its facilities consolidated with the present Buffalo Works, he moved to Buffalo. In 1930 he returned to New York when the company's general offices were established there.

Squeaks from the Bull Wheel

Rebuff

Gosh, something's happened, the engine's dead.

Well, it has plenty of company in this crowd.

Tick-Tick

"I woke up last night with the feeling that my watch was gone, so I got up and looked for it."

"Well, was it gone?"

"No, but it was going!"

Bad

"Can you spell 'weather'?"

"Sure — w-e-o-a-t-h-u-r-e."

"Br-r-r-r! That's the worst spell of weather we've had in years."

Invariably

"What happens when a body is completely immersed in water?"

"The telephone rings."

Passed On

"How about two of them?" asked the druggist of the man who was buying a toothbrush. "One for your wife?"

"No, thanks. When I buy a new one, I always give her the old one."

While other customers in the store gasped, he added: "She uses them to clean her shoes."

Right the First Time

"If you please, ma'am, the cat's had chickens."

"Nonsense, Mary; you mean kittens."

"Was them chickens or kittens you brought home this morning?"

"Chickens, of course."

"Well, ma'am, them's what the cat's had!"

Annoyed

During the sermon, a baby began to cry at the top of its voice, and its mother carried it toward the door.

"Stop!" said the minister. "Your baby is not disturbing me."

The mother turned toward the pulpit: "Oh, he ain't, ain't he? Well, you're a-disturbin' him."

Not for Long

Jewel: "But Bob—I'm afraid the mountain air will disagree with me."

Bob: "My dear, it wouldn't dare."

Cured!

"So you've been cured of your insomnia? It must be an immense relief."

"Relief? Why, I lie awake half the night thinking how I used to suffer from it."

Trends

I stopped at the grocery counter and took out the list my wife had given me. "I want," I said to the clerk, "a loaf of Mumsie's Bread, a packet of Krunchies, some Goody Sanny Spread, Ole Mammy's 'Lasses, Orange Puddy, Bransie Buns and a pound of Aunt Annie's Sugar Can'y, Bitsy-bite size."

"Sorry, no Krunchies. How about Krinkly Krisps, Oatsies, Maltsey Wheats, Ricelets, Cornsie Ponesies, or Wheetums?"

"Wheetums, then."

"Anything else? Tootsies, Tatery Chips, Cheesie Weesies, Gingie Bits, Itsey Cakes, Sweetie Toofums, or Dramma's Doughnies?"

"Tain't anysing else," I said, and I toddled toward the meat department to look for teensy Wienies and a leg of lambikins.

Once Again

On going into the cowshed, the farmer was surprised to find his new hand, a town girl, giving one of the cows a drink from her milking pail.

"What are ye doin' that for?"

"Well, the milk seemed pretty thin to me, so I thought I'd better put it through the process again."

Duck

"Why do all radio announcers have small hands?"

"Why do they?"

"Wee paws for station identification."

Joke!

Aunt Agatha dropped in for a chat. "Oh, auntie, how ugly you are!" said her little niece.

"Eva!" cried her mother, horrified. "How can you say such a thing?"

"I just said it as a joke, mother!"

"It would have been a much better joke if you had said, 'Oh, auntie, how pretty you are,'" chided her mother.

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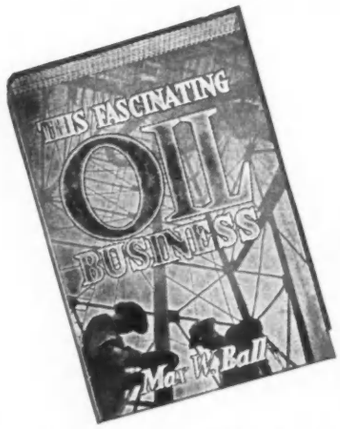

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THE B. F. GOODRICH COMPANY

An added construction for its type 400SS oil hose, with elimination of all natural rubber and substitution of its own synthetic rubber, Ameripol, is announced by The B. F. Goodrich Company, Akron, Ohio.

This type hose is also made with an Ameripol synthetic rubber tube, but with the cover and rubber used to impregnate the body plies of natural rubber. The new design incorporates Ameripol in every part of the hose.

All the hose is thus made resistant to the action of oils, gasolines or other solvents of natural rubber. New construction also affords stronger adhesion of all parts with an additional margin of safety against ply separation.

Magcobar Mud Weight Sales Handled by Own Organization

Magnet Cove Barium Corporation, Malvern, Arkansas, announces that hereafter its product will be known under the trade name of Magcobar and will be marketed through the company's own sales organization.

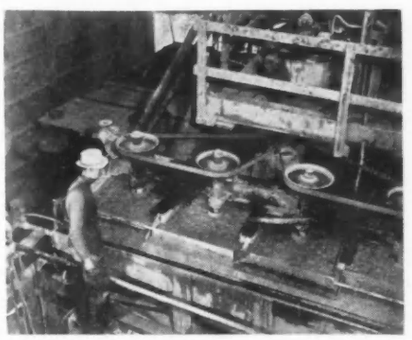
For the past year and a half this mud weight has been sold through a sales agent under the name of Magnawhite.

Sales offices have been opened in the Niels Esperson Building, Houston, with Willard Johnson, president of the corporation, in charge of sales activities. He is also vice president of Wolf River Corporation, which control a large barite mine. The company offers the services of experienced mud engineers who will be available for consultation on weighting material problems.

Large stocks of Magcobar are maintained at the plant at Malvern with complete warehouse stocks throughout the Mid-Continent and Texas, Louisiana, and Gulf Coast.

The company's activities at Malvern are under the guidance of H. B. Brown, vice president, and L. Roth Harrison, general manager. Harrison, a metallurgist and engineer, adapted the flotation process for concentrating the material. This is the first recorded case of flotation of a non-metallic mineral ground so fine.

Magcobar weighting material is an inert material very high in $BaSO_4$ content. The crude rock is mined at Magnet Cove, Arkansas, a short distance from the company's plant at Malvern. The ore deposit consists of a giant syncline with outcrops one third of a mile apart. The bed varies from 15 or 60 feet in width and consists of many small beds of barite rock, sandstone and various colored clays. It has been estimated that the deposit contains sufficient barite to last 100 years at the present rate of mining.



Partial view of the flotation process as the barite has agglomerated and floated to the top of the large cells from where it passes on to the final processing.

Bethlehem Supply Company To Sell Superior Engines

Superior gas and diesel oilfield engines have been added to the line of equipment sold by Bethlehem Supply Company.

Under supervision of Arch F. Campbell, sales manager of the Superior Engine Division of The National Supply Company, an enthusiastic and very successful six-day sales meeting was recently held at the Superior factory at Springfield, Ohio. Bethlehem salesmen attending the meeting were under the direction of B. E. Groenewold, manager, machinery department, Bethlehem Supply Company.

Los Angeles Nomads Hold Third Annual Inaugural Ball

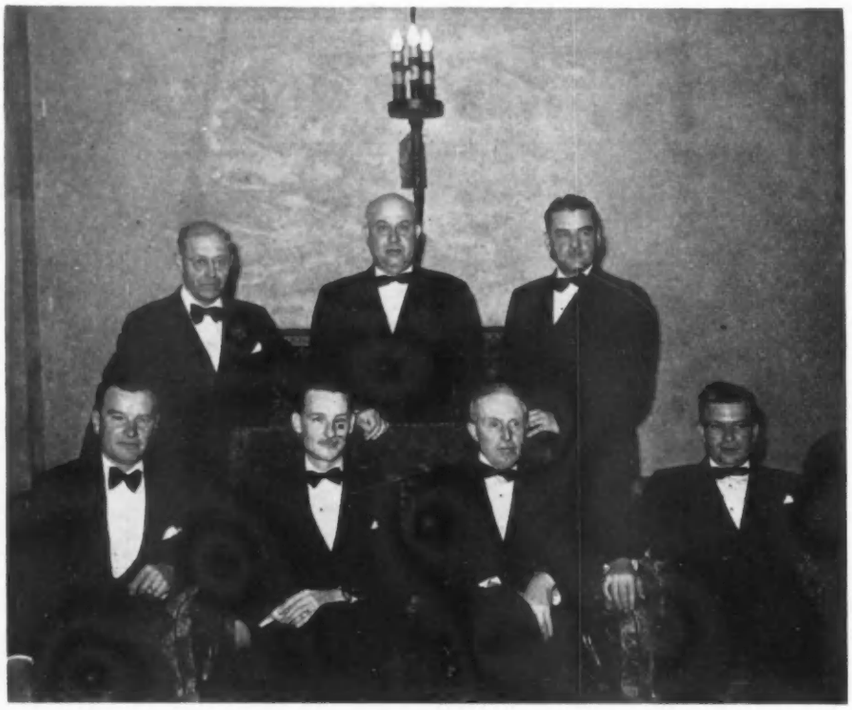
The third annual inaugural ball of the Los Angeles Chapter of Nomads was held at the Pacific Coast Club, Long Beach, California, February 20.

The ball was in honor of the incoming and outgoing officers and national regents. The incoming officers are W. F. Bettis, president; E. M. Rees, vice president; R. J. Eiche, secretary; E. R. Smith, treasurer; R. E. Smith, sergeant-at-arms; J. C. Ballagh, assistant secretary; D. B. Waite, assistant treasurer; and T. C. Murphy, assistant sergeant-at-arms. The outgoing officers were E. B. Fowks, president; W. F. Bettis, vice president; E. M. Rees, secretary-treasurer; R. J. Eiche, sergeant-at-arms; E. R. Smith, assistant secretary-treasurer; and Roy Hitchcock, assistant sergeant-at-arms. T. Sutter remains as one of the national regents and E. B. Fowks becomes the second national regent.

Over 200 people were in attendance

Left to right: W. F. Freeman, The National Supply Company; A. G. Weber, J. R. James, J. F. Eaton, R. A. Johnson, H. A. Barnes, B. E. Groenewold, Bethlehem Supply Company; H. M. Houston, The National Supply Company and V. D. Bennett, Bethlehem Supply Company.

Arch F. Campbell, George W. Stevens, The National Supply Company; D. C. Laughlin, T. W. Thurmond, George L. Reid, A. G. Vielhover, K. N. Mills, Bethlehem Supply Company; H. M. Cahill, The National Supply Company; B. E. Groenewold, I. V. Spaulding and F. A. Holmberg, Bethlehem Supply Company.



New officers of the Los Angeles Chapter of Nomads at their third annual inaugural ball. Seated, left to right, Roland E. Smith, sergeant-at-arms; W. F. Bettis, president; E. M. Rees, vice president; Elmer L. Smith, treasurer. Standing, J. C. Ballagh, assistant secretary; E. B. Fowks, national regent; D. B. Waite, assistant treasurer.

and among the guests from foreign countries were John Domereq of California Standard Arabian Oil Company, who has until recently been stationed in Arabia; William Thornberry of Ecuador Oil Fields, Ltd., who is on a visit from Ecuador; A. F. Driskill of Iraq Petroleum Company, who is waiting for world conditions to permit his return to Iraq; Jack Devine and Bill Foran, who were formerly stationed in Iraq for the Iraq Petroleum Company; Fred Vandenburg of Colombian Petroleum Company, who is on a visit from Colombia; and G. C. Higgins, with the B.P.M., who is waiting to return to duty either in the Near East or East Indies when conditions permit. Claude Banta and Al Farrow were guests from the Houston Chapter of Nomads.

Valve Repair Service

Well Equipment Manufacturing Corporation, Houston, announces that it is equipped to repair or rework plug valves. The new service includes bronze, chrome and steel plating.

The same process is used in chrome plating repaired valves as is used in plating new valves. Every valve goes through a standard routine, which when completed is backed by a new valve guarantee.

New headquarters for all Mid-Continent areas of The Cavins Corporation, 525 McCarty Street (Beaumont Road), Houston, out of which branch service locations at Dallas, Corpus Christi, Odessa, Pampa and Kilgore, Texas; Lake Charles, Louisiana; Artesia, New Mexico; Seminole Oklahoma and Ellinwood, Kansas, are directed by Franklin F. Jones, manager. The Cavins Corporation recently succeeded Cavins Bailer Service in the Houston, Kilgore and Lake Charles districts, and The Cavins Company in the remaining six districts. Sales and service of Cavins bailers, sand pumps, fishing tools and screen and perforation cleaning tools are now being maintained by service men at Houston headquarters as well as all branch locations.

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* Indicates that detailed information on the manufacturer's products or services may be found in the 1942 edition of The Composite Catalog of Oil Field & Pipe Line Equipment.

BRONZOID Scores! Because it will not SCORE YOUR SHAFTS

High compressive strength — low Brinell hardness — outstanding performance record.

Only genuine BRONZOID contains pre-treated lead —which arrests crystalline growth.

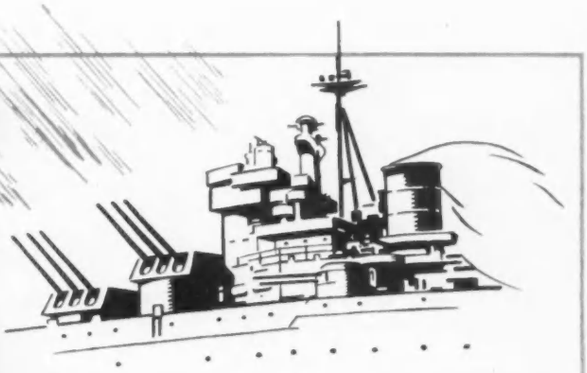
BRONZOID

Ask for it by name — BRONZOID

OIL CITY BRASS WORKS
FOUNDERS MANUFACTURERS MACHINISTS
Beaumont, Texas, U.S.A.

THIS IS NO TIME

to shoot blanks!



YET every slug of B.S. and W. that gets by your dehydrating system is a blank when you're shooting for top production efficiency. Now, when pipeline, storage and tanker space is at a premium, even a small percentage of emulsion in shipment is costly. The defense program calls for petroleum products of the highest quality . . . fuels, lubricants, toluols and synthetics daily become more vital with every step-up of war production. It logically follows that this is no time to use haphazard dehydration methods. Call your Tret-O-lite representative now—he'll be glad to check over your dehydrating problems with you . . . to help you "do it better."

TRETOLITE COMPANY

MANUFACTURING CHEMISTS

WEBSTER GROVES
ST. LOUIS COUNTY, MISSOURI
LOS ANGELES, CALIFORNIA

Representatives in All Principal Fields

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REG. U. S. PAT. OFF.

DEHYDRATING **DESALTING**

Thousands of drums

Prove Efficiency of General American Service

Thousands upon thousands of steel drums are being filled by General American's automatic drumming equipment at Goodhope (New Orleans), Carteret (port of New York) and Corpus Christi, Texas. But we still have the capacity to handle *your* drumming requirements — with utmost speed and economy. Check General American Transportation's advantages for all your storage and reshipping needs!

"DRUMMING BY GENERAL AMERICAN"

. . . Security and Savings to YOU:

1. SPEED WITH SAFETY. Ample facilities for automatically drumming any shipment large or small, by fastest, safest, most modern methods.
2. ECONOMY. We can drum direct from tank car—no loss of commodity, no pumping charge; after drums are filled, free storage for 15 days.
3. RELIABILITY. General American's long-standing reputation for dependable custodianship is your assurance.
4. INDEPENDENT OWNERSHIP. Strictest privacy assured on all your orders. We do not buy, sell or refine any liquids.
5. AUTOMATIC FILLING. Latest type equipment insures absolutely accurate measure in every drum.

KEEP 'EM ROLLING! **Freight cars—particularly tank cars—are vital to Victory. They must be loaded, unloaded, kept moving with all possible speed. Delays may cost lives!**

GATX GENERAL AMERICAN

GENERAL AMERICAN TANK STORAGE TERMINALS

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A DIVISION OF GENERAL AMERICAN TRANSPORTATION CORP.

LOOKING AHEAD

. . . with the Editor

Planned and Controlled Operations Reflected By Successful Water Flood

Despite the increasing interest being shown toward water-flood methods of secondary recovery, there no doubt still remains a widespread belief, particularly among many smaller companies, that flooding operations are "out of their reach"—that the expenditure of money, equipment, and effort is too great for the average small operator.

The technique of water flooding semi-depleted or even some abandoned shallow fields, has made great strides in recent years. As a consequence, there is becoming available to the industry, an increasingly greater quantity of data and general engineering knowledge, along with much practical field experience. By combining this knowledge with a practical and conservative outlay of equipment, water flooding operations may be evolved down to problems not much greater than those of many other lease developments.

In an early issue, we will carry an illustrated article describing a successful 40-acre flooding project in West Central Texas which bears out the above points and well illustrates what may be done with a small property by following several well-defined rules and previously proven practices.

Before flooding operations were started, this experimental tract, to which soon will be added over 200 acres more in the same field, was making approximately 100 barrels per month total from 14 wells. Now, 11 months after the flood was started, the lease is producing well over 4000 barrels per month, and the curve is still rising sharply. Several conditions make water flooding in this area particularly favorable.

★ KEEP 'EM PRODUCING ★

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